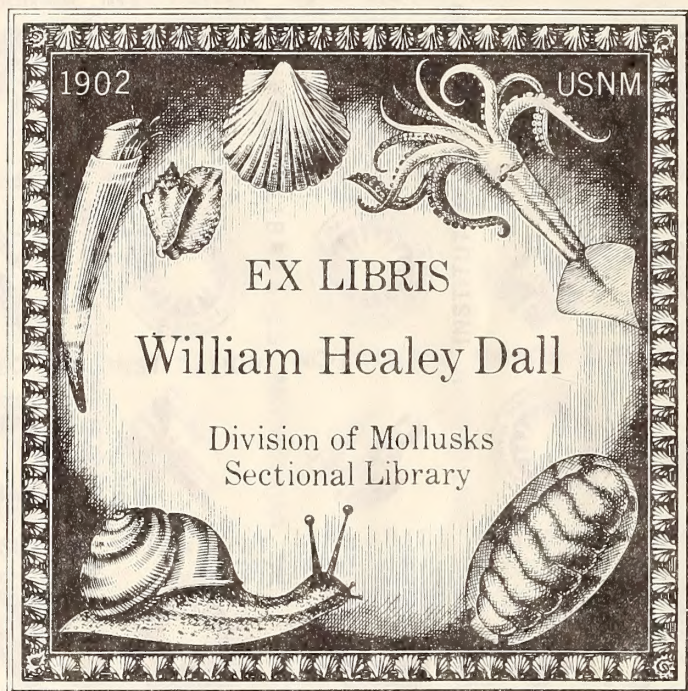


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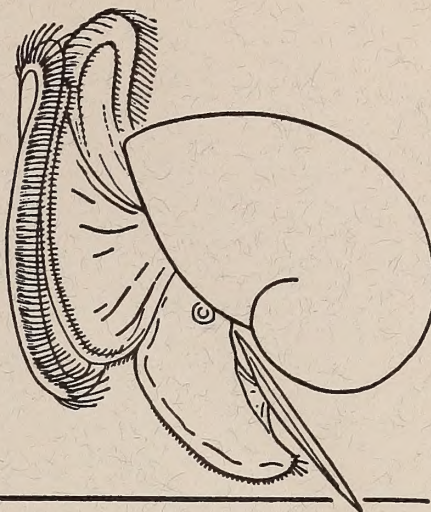
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# THE VELIGER

A Quarterly published by  
CALIFORNIA MALACOOLOGICAL SOCIETY, INC.  
Berkeley, California



VOLUME 7

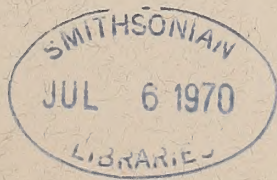
MARCH 15, 1965

SUPPLEMENT

## A GLOSSARY OF A THOUSAND-AND-ONE TERMS used in CONCHOLOGY

compiled  
by

WINIFRED H. ARNOLD



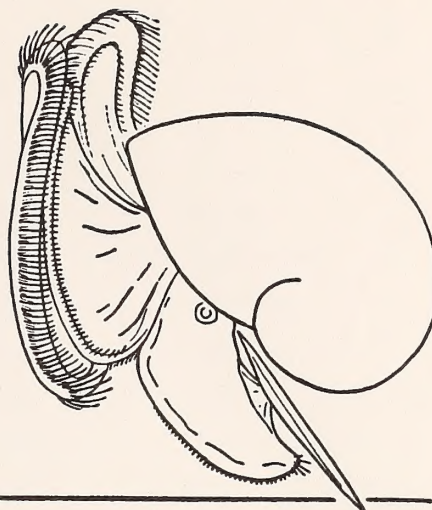


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A GLOSSARY  
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WINIFRED H. ARNOLD  
Tucson, Arizona







*Introduction*

The aim in compiling this glossary has been to provide a convenient reference book of definitions for terms used in the description of shells — and in related subjects — for the amateur as well as the more advanced student of conchology. Even though some of the terms are no longer used, or only rarely, their definitions are necessary for the understanding of the detailed descriptions found in older books.

Many shell books include a brief glossary, but these are frequently somewhat limited in their scope, and a need was seen for a book that would include as many of the unfamiliar terms as possible under one cover. Much interesting information is lost to the reader if he is unable to understand the terminology used.

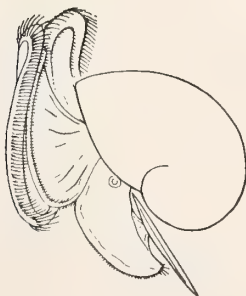
The glossary includes the derivations of terms with the hope that those not familiar with Latin, Greek, or other languages will find it helpful in explaining the definitions and clarifying the meanings of the scientific names. Abbreviations used are as follows:

Am Ind	=	American Indian
AS	=	Anglo-Saxon
Dan	=	Danish
Fr	=	French
G	=	German

Gr	=	Greek
Hind	=	Hindustani
Ice	=	Icelandic
L	=	Latin
LL	=	Low Latin or Late Latin
MD	=	Middle Dutch
ME	=	Middle English
Norw	=	Norwegian
OFr	=	Old French
Sp	=	Spanish

My appreciation is expressed to Dr. Rudolf Stohler who has been most encouraging with constructive comments and criticism and has attended to the editing and innumerable tasks connected with publication. I should like to express my special thanks to Mr. and Mrs. Crawford N. Cate for their interest and their many helpful suggestions, and for all the time that Jean Cate has spent on proofreading. My compliments go to the fine artist, Mrs. Emily Reid, for her excellent original drawings which have added so much to the book, and to Mrs. Heidi S. Norskog for the careful preparation of the typescript.

-- Winifred Haynes Arnold









## A

ab-a-lo'ne (corruption of the Spanish aulon or aulone): an ear-shaped, flattened, slightly spiral shell with a series of perforations; a sea-ear (i. e., *Haliotis* -- called "abalone" on the U. S. Pacific coast; "paua" in New Zealand; "perlemoen" in Afrikaans; and "ormer" in French)

ab-ap'er-tur-al (L ab = away; apertura = an opening): away from the shell aperture

ab-ap'ic-al (L ab = away; apex = apex): away from the apex along the axis or slightly oblique toward the base

ab-ax'i-al (L ab = away; axis = axis): situated away from the axis or central line outward

ab-bre'vi-ate (L ad = to; brevis = short): to shorten, reduce, compress, contract

ab-er'rant (L ab = from; erro = wander): deviating from the usual type of its group; abnormal, wandering, straying, different

ab-o'ral (L ab = from; os[oris] = mouth): pertaining to or situated in the part most remote from the mouth

a-bort'ed (L ab = from; orior = grow): to make or become abortive, arrest in or fail of development, coming to naught, rudimentary, imperfectly developed

ab-rade' (L ab = from; rado = scrape, rub): to rub or wear off, to waste by friction

a-byss'al region (Gr abyssos = a-privative; byssos = bottom): bottomless, the cold, deep, and dark area of the ocean; from 300 fathoms down

ac-an-tha'ceous (Gr akantha = thorn): armed with prickles; acanthoid: spiny

ac-ces'so-ry (L ad = to; cedo = go): aiding the principal design; contributory, supplemental, additional

accessory lamellae: shelly plates in the hinge of certain pelecypods; shelly accessory plate as in *Barnea costata* Linnaeus (Fig. 1)

ac-cli'mate (L ad = to; climat = region): to adapt or habituate to a foreign or different climate

ac-cliv'i-ty (L ad = to; clivus = hill): an upward slope; opposite to declivity

-acea: a suffix, a combining form for names of classes or the superfamily (i. e., Tonnacea, Veneracea); see -idae and -inae

a-cic'u-la (L acicula = a small needle): a slender needle-like process, a spine or prickle; Acicula: a genus of minute turreted gastropods

a-cin'a-ci-form (L acinaces = a scimitar + form): scimitar-shaped, having one edge

thick and slightly concave, the other thin and convex, so as to resemble a scimitar — an oriental sword of extreme curve

Ac-ti-no-don'ta (Gr aktis = ray; dont = teeth): an order of bivalves where the teeth radiate downward from the umbo; in the early actinodont dentitions, the centrally located teeth were short and likely to be heavy, whereas the outer or posterior ones were elongated and slender

a-cu'le-ate (L aculeatus = a sting): having prickles, sharp points, or spines; aculeiform: having the form of a prickle (i. e., *Pholadidae*)

a-cu'mi-nate (L acuo = sharpen): terminating in a long tapering point

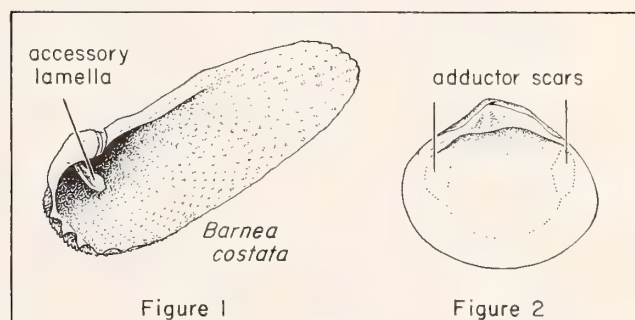
a-cute' (L acutus = to sharpen): sharp at the end, acute-angled, having a sharp or sharply tapering point; acutissimus: very acute, very pointed

ad-ap'er-tur-al (L ad = to; apertura = an opening): toward the shell aperture

ad-ap'ic-al (L ad = to; apex = apex): slightly oblique or along the axis toward the apex

ad-ax'i-al (L ad = to; axis = axis): inward toward the shell axis

ad-duc'tors (L ad = to; duco = lead): the muscles of a bivalve mollusk, which are attached to the valves internally, adduct or draw together the two portions of the shell and so close it; adductor scars: depressions which mark the attachment area of the muscles which close the bivalve shell (Fig. 2)



ad-her'ent (L ad = to; haereo = stick): attached, clinging or sticking fast

ad-me'di-an (L ad = to; medius = middle): the lateral teeth of a radula, between the central and the marginal

ad'nate (L ad = to; nascor = be born): valves joined together at the dorsal margin by the substance of the shell itself, the valves appearing to grow together in such a manner that they cannot be separated without one being broken



ad-pressed' (L ad = to; premere = to press): overlapping whorls with their outer surfaces very gradually converging; preferred to the term appressed

a-dult' (L adultus = grow up): pertaining to mature life, full grown, full growth

ad-vo-lute' (L ad = to; voluto = to roll, turn): whorls that do not distinctly overlap, but just barely touch each other

aes'thete (Gr aisthetes = one who perceives): the sensory organs terminating in the tegmentum of some chitons; the larger ones, in the form of eyes, are called megalaesthetes, and the smaller ones micraesthetes

aes-ti-va'tion (L aestas = summer): a period of suspended animation during hot or dry weather; dormancy in summer of certain land snails

af'fer-ent (L ad = to; fero = bear): conducting inward, toward the center or to some part or organ, opposed to efferent

ag-glom'er-ate (L ad = to; glomus = ball): gathered into a mass or cluster as some mussels, clustered densely, piled or heaped together

ag-glu'ti-nate (L ad = to; gluten = glue; Fr glu = birdlime): join by adhesion, to unite as with glue, cause to stick together

al-a-bas'trine (Gr alabastos = alabaster box): pertaining to or like alabaster, smooth and white

a'late (L ala = wing): winged, wing-like projections as on some Unios and Pectens; refers to the outer lip as the wing-like outer lip of Strombus (Fig. 3)

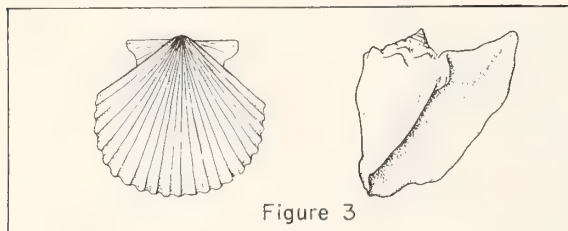


Figure 3

al-bi'no (L albus = white): lacking normal pigmentation, unnaturally white; al'bi-not'ic: white

al'i-vin'cu-lar hinge (L ala = wing; vincio = bind): a somewhat flattened cord from one umbo to another, the long axis transverse to the planes of the margins and the axis of motion (i. e., Spondylus)

allopatric (Gr allos = other): applied to distributional ranges of closely related species which complement each other in space; that

is, they do not overlap

al'lo-type (Gr allos = other; typos = strike): a paratype of different sex from the holotype

al'ti-tude (L altus = high): in gastropods, the greatest length parallel to the shell axis through the columella; in pelecypods, the greatest vertical dimension through the beak at right angles to a line bisecting the adductor scars; the term height is preferred

am-big'u-ous (L ambi = around; ago = drive): vague, doubtful, having more than a single meaning

am'e-thys'tine (Gr a = priv.; methy = wine): pertaining to or resembling amethyst, a bluish-violet color, as distinguished from Tyrian or hyacinthine purple

am'mon-ite (L cornu Ammonis = horn of Ammon): any fossil ammonian cephalopod shell curved into a spiral like a ram's horn, varying in size from a few grains to three or four feet in diameter, common in Paleozoic and Mesozoic rocks of all parts of the world; ammonoid: shell covered cephalopod (e. g., ammonites, ceratites, and goniatites)

a-moe'boid (Gr amoibe = change + oid): resembling an ameba, as in its changeable form

a-mor'phous (Gr a = priv.; morphe = form): without distinctive form, structureless, unshapely, shapeless

am-phib'i-ous (Gr amphi = double; bios = life): capable of living both on land and in the water

am'phi-det-ic (Gr amphidetic = bound all around): said of the ligament of certain bivalves which extends both before and behind the beak (e. g., Lima, Glycymeris)

Am-phi-neu'ra (Gr amphi = around; neuron = nerve): one of the five classes of mollusca, the chitons

a'nal (L anus = ring): pertaining to or situated in the region of the anus; anal fasciole: a band close to the adapical suture and anal opening caused by an indentation of the outer lip; anus: the opening through which the excrement is expelled

a-nal'o-gous (Gr ana = according to; logos = proportions): resembling in certain respects, similar, related

an-ap'ty-chus (Gr ana = back; ptychos = a fold): a shelly plate found in some fossil cephalopods, used perhaps to close the shell

a-nas'to-mose (Gr ana = again; stoma = mouth): fusing or running together to form a network; a union; interlacing or running into one another



a-nas'tro-phic (Gr ana = back; strepho = turn): the nucleus of the shell directed toward the base (i. e., as in *Architectonica*)

an-cip'i-tal (L anceps = double-headed): two-edged, double-faced, double-formed, shell having two varices which are continuous like *Ranella* (Fig. 4)

an'cy-loid (Gr ankylos = hooked; eidos = form): shaped like the patelliform shell of the genus *Ancylus*, a minute freshwater limpet-like mollusk, with the apex definitely directed anteriorly

an-frac'tu-ose (L an = about; frango = break): winding, full of windings or turnings

an'gu-late (L angulus = corner): having angles, sharp corners; angulation: an angular formation or edge where two surfaces meet at an angle

an-gus'tate (L angustus = narrow): narrow, compressed, diminishing rapidly in breadth

aniso- (Gr anisos = unequal): a prefix signifying unequal or dissimilar; a-ni-so-my-ar'i-an a bivalve with the anterior adductor more highly developed than the posterior one

an-not'i-nate (L annotinus = a year old): depressed lines placed at irregular distances across some bivalve shells, marking their yearly growth

an'nu-lar (L anus = ring): ring-shaped; marked with rings or bands; annulations: made up of rings, circular or ring-like formations

an-o-mal-o-don'ta (Gr anomalos = irregular; dont = teeth): an order of bivalves; dentitions, when present, characterized by teeth that are quite small or wanting altogether; a group mostly edentulous in the weak valve, but denticles may be present and a calcareous buttress or ridge inside just under the beak serving to reinforce the hinge process

a-nom'a-lus (Gr anomalos = irregular): deviating from the common or usual rule, form,

or manner; irregular, exceptional, abnormal

an-om'pha-lous (an = a negative prefix; Gr omphalos = the navel): lacking an umbilicus

an'te-al (L ante = before): being in front of before, farther front or forward (rare)

an-te-pe-nult'i-mate whorl (L ante = before; penultimate = last but one): pertaining to the last but two of any series; the second whorl before the body whorl

an-te'ri-or (L ante = before): situated in front, in lower animals relatively nearer the head, the front end; in bivalves, the umbones usually turn toward the front, and the pallial sinus is at the rear or posterior end; in gastropods, the lower canal is the anterior being nearest to the head of the animal, and the spire represents the posterior end; in limpets, the apex is usually nearer the anterior end; in scaphopods, the anterior end is the larger end of the shell (Fig. 5)

anterior keel: the high point of the whorl next to the suture at lower edge nearest to the anterior end of the shell

an-trorse' (NL antro = before; versus = turn): leaning forward, or forward and upward

ap'er-ure (L apertura = an opening): the opening in a gastropod shell; an open passage, orifice, hole; the aperture may be entire when its peristome or margin is not interrupted by any notch or canal, or prolonged at its posterior end into a canal; apertural: on the same side as the aperture or pertaining to it

a'pex (L apex = the tip, summit): the highest point of anything, tip, vertex, peak; the point at the tip of the spire of a gastropod. The apex is the extreme top of the spire and generally consists of the embryonic shell, which may often be recognized by its entire want of sculpture; when the embryonic shell happens to be large, the apex is often mammillated, as in *Voluta* (Fig. 6)

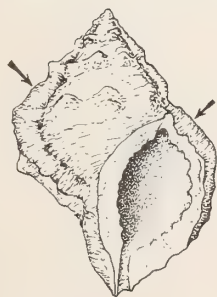


Figure 4

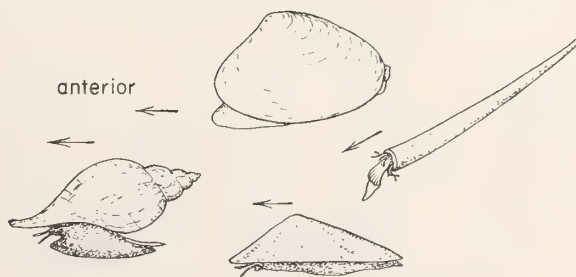


Figure 5



Figure 6



ap'ic-al: situated or belonging to the apex or top, as of a conical figure; apical angle: same as the spire angle if the whorls increase at a regular rate; apical orifice: an opening at the top or apex of a shell (Fig. 7); apical spur: the initial pointed plug forming a posterior septum in some truncate shells (e. g., Caecum) (Fig. 8)

a-poph'y-sa-ry (Gr apo = from; phyo = to grow): a process of bone or shell, an offshoot; apophysis: a bony protuberance, finger-like structure; spoon-shaped, calcareous (e. g., as in Pholadidae)

ap-pressed' (L ad = to; premere = to press): pressed or applied closely against something, adherent

a-privative = privative: an "a" altering a word so as to express a negative instead of a positive {In this glossary indicated as follows: a = priv.}

ap'ter-ous (Gr a = priv.; pteron = wing): destitute of any wing-like processes; wingless, without wings or wing-like expansions

ap'ty-chus (Gr a = priv.; ptychos = a fold): a double calcareous plate found in many fossil ammonites, supposedly an operculum

a-quat'ic (L aqua = water): pertaining to, living, growing in, or adapted to the water, native to water; aquiferous: supplying water or watery fluid, as the aquiferous canals of certain mollusks (Polinices)

a-rach'noid (Gr arachne = spider + oid): like a spider's web, thin and fine, filmy

ar'a-go-nite (from Aragon, in Spain): a calcium carbonate, dimorphous with calcite; the innermost layers of a shell are commonly aragonite

ar-bo-res'cent (L arbor = tree): tree-like in character or appearance, branching like a tree; some species of Murex are said to be arborescent (Fig. 9)

archaeo- (Gr archaios = ancient): a prefix denoting ancient or old (e. g., Archaeogastropoda)

ar'chi-ben'thic region (Gr archos = chief; benthos = depth): the zone extending from the

sublittoral to a region between 800 to 1,100 meters

ar'chi-type or archetype (Gr archi = chief; typos = strike): ancestral type established hypothetically by eliminating specialized characters of known later forms

arc'u-ate (L arcus = a bow): curved as a bow, or arched, as the ventral edge in some pelecypods (e. g., Glycymeris)

ar-e-na'ceous (L arena = sand): of sandy consistency; pertaining to or like sand; full of or growing in sand

ar-gen'te-ous (L argentum = silver): like silver, silvery

ar-gil-la'ceous (L argilla = white clay): containing, consisting of, or like clay; clayey

ar'go-naut (Gr argo = Jason's ship; nautes = sailor): pelagic octopods; the female secretes a papery, unchambered shell which serves as a receptacle for the eggs and as a dwelling chamber (e. g., Argonauta, the paper nautilus)

Aristotle's lantern: the skeleton of the mouth parts of a sea urchin

ark (L arca = a chest, box): a marine arcoid bivalve with an equivale shell, hinge crossed by numerous transverse or oblique teeth, heavy box-like shell, ark-shell (e. g., Arcidae) (Fig. 10)

artenkreis: a series of geographically contiguous subspecies forming what may be termed a superspecies

ar-tic'u-la-mentum (L artus = joint): indicates the crystalline shell layer between the tegmentum and hypostracum in chitons

ar-tic'u-lated (L articulatus = jointed): the union forming a joint as the interlocking teeth of the hinge plate in pelecypods

as'per-ous (L asper = rough): with very distinct elevated dots, more uneven than scabrous; rough to the touch

As-the-no'donta (Gr a = priv.; stenos = strength; dont = teeth): an order of bivalve borers and burrowers in which the teeth have become obsolete; the shells gape at the ends and have a chondrophore in one valve (e. g., Myacea)

apical orifice

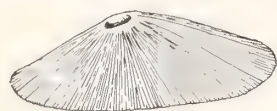


Figure 7

apical spur



Figure 8



Figure 9



Figure 10



as'tra-gal (Gr astragalos = ankle bone): a strong, rounded, steep-sided elevation extending spirally around the whorls

as-ym-met'ri-cal (Gr a = priv.; syn = with; metron = measure): not even on both sides of an axis, bilaterally unequal, lack of symmetry

at'ro-phied (Gr a = priv.; trepho = nourish): wasted away or withered, starved, failure of an organ or part to grow because of insufficient nutrition or for other reasons

a'trous (L ater = black): intensely black

at-tach'ed (Fr attacher = to tie, fasten): joined, connected, or firmly fixed to some object

at-ten'u-ate (L ad = to; tenuis = thin): to become thin, slender, fine, drawn out, growing narrower, tapering

at-tri'tion (L ad = to; tero = rub): a rubbing out or grinding down by friction; the sculpture is generally obliterated, being worn down by the attrition caused by moving sand

au'ger (ME nauger = bore, point): a slender pointed univalve living just under the surface of the sand in shallow tropical waters; auger shells (e. g., Terebra) (Fig. 11)

au'ri-cal (L auris = ear): an ear or ear-shaped appendage or part; auricula - a small ear-shaped appendage; auriculate - eared or with ear-like appendages or projections, as in Pecten; auriform - shaped like or resembling an ear

aus'tral (L auster = south): southern, torrid southerly, or belonging to the south

a-vic'u-oid (L avis = bird + oid): having wing-like projections

ax'i-al (L axis = axis): around or along an axis, term applied to ribs or color bands which are longitudinal, not spiral; parallel to the axis of coiling in gastropod; axis, also termed pillar: the central structure of a spiral shell, around which the volutions revolve; a line, real or imaginary, on which something rotates, or around which something is symmetrically arranged (Fig. 12)

## B

bac'u-lite (L baculum = rod): straight shelled ammonite, becoming extinct at the end of the Cretaceous Period

bar'na-cle (ME barnakylle, dim. of bernake = the goose): a crustacean, not a mollusk, but included with the latter as late as 1830; the name originally applied to the bird, not to the shell; any number of related shell-bearing sea animals that attach themselves to rocks, wharves, and ship bottoms, obtaining food by sweeping through the water a bundle of cirri which are protrusile from an opening in the shell

base (Gr basis = a pedestal): the extremity opposite the apex of the spire; basal: the bottom or lower part; basal lip: aperture margin from the foot of the columella to the suture, part of the outer lip; abapical

bath-y-lim-netic (Gr bathys = deep; limnetic = living in fresh water, marshes): pertaining to or inhabiting the depths of fresh water lakes

bath-y-met'ric (Gr bathys = deep; metron = measure); bathymetric zone: one of the horizontal divisions of the ocean; bathymetry: the science of measuring depths or the art of deep sea sounding

bath-y-pe-lag-ic (Gr bathys = deep; pelagos = the open sea): living on or near the bottom in the abyssal depths of the ocean

bat'tle-ment (Ofr bastiller = to fortify): a parapet indented along the upper line, alternating solids and open spaces

beak (L beccus = a beak): the rounded or pointed extremity of a pelecypod or brachiopod shell at which it began to grow; the apex or umbo of a bivalve shell; the beaks are either straight as in Pecten, curved as in Venus, or spiral as in Isocardia; also, a short rudimentary siphonal canal near foot of the columella; beaked valves of chitons are called mucronate (Fig. 13)



Figure 11

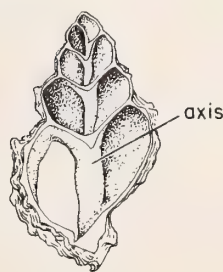


Figure 12

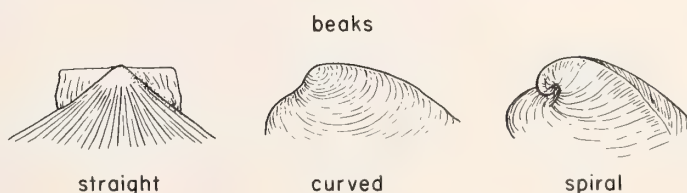


Figure 13



beard (L barba = beard): the byssus of certain kinds of mollusks such as mussels; consisting of relatively fine threads or hairs by which shells fasten themselves to rocks, etc.; bearded: as the coarse periostracum on *Arca* and *Volsella* (Fig. 14)

be-lem'nite (Gr belemnion = a dart or arrow): a generic name for the organic remains of extinct fossil bodies found in Cretaceous formations, having straight tapering shells and belonging to the class Cephalopoda; the pointed cylindrical fossil internal shell of a belemnite cuttlefish; a thunderstone

bel-ler'o-phonts (Gr Bellerophon, the slayer of the mythological monster Chimaera): a genus of fossil gastropods of the Paleozoic age coiled symmetrically in one plane and having a grooved or keeled periphery with a central notch or slit

ben'thos (Gr benthos = depth of the sea): the whole assemblage of plants or animals living in or upon the sea bottom; benthal: pertaining to or designating depths of ocean exceeding 1,000 fathoms

bi-a'late (L bi = two; ala = wing): two-winged as some *Pectens*

bi-an'gu-lar (L bi = two; angulus = corner): with two angles or double keeled

bi-can-a-lic'u-late (L bi = two; canalis = a channel, pipe): two canals posteriorly contracted near their junction and drawn out to form a groove (Fig. 15)

bi-con'ic-al (L bi = two; Gr konos = a peak or cone): similar in form to a double cone; biconic: diamond-shaped; similar in form to two cones placed base to base; the spire of about the same shape and size as the body whorl (Fig. 16)

bi-cus'pid-ate (L bi = two; cuspid = point): having two cusps or points, double pointed

bi'fid (L bi = two; findere = to cleave, divide): divided into two branches, arms, or prongs, or into two equal parts by a cleft; separated down the middle by a slit; divided by a groove into two parts

bi-fur'ca-ted (L bi = two; furca = fork): divided into two branches or stems, double-pronged; bifurcation: division into two branches; the bifurcate cardinal tooth in *Mactra*

bi-ju'gate (L bi = two; jugum = a yoke): yoked two together, two-paired, in two pairs; bijugum

bi-lam'el-lar (L bi = two; lamina = a thin plate): two-lipped, having two lamellae or plates

bi-loc'u-lar (L bi = two; locus = a cell, box): two-celled, divided into two cells or chambers or compartments

bi-mac'u-late (L bi = two; macula = a spot, fleck, stain): having two spots, marked with two colored spots of rather large size

bi-mar'gin-ate (L bi = two; margo = edge, border, margin): having two margins; term applied to shells which have a double margin as far as the tip

bi-nod'u-lose (L bi = two; nodulus = a little knob): having two nodes, knobs, or swellings of small size

bi-no'mi-al no'men-cla-ture (L bi = two; nomen = name; calare = to call): the system adopted by the International Congress of Zoology by which an organism's scientific name is designated by both a generic and a specific trivial name

bi-o'ta (Gr biotikos = pertaining to life): the flora and fauna, collectively, of a particular region

bi'o-type (Gr bios = life; typos = strike): a population or a group of individuals having the same type species in common

bi-par'tite (L bi = two; partire = to divide): with two distinct parts

bi-pli'cate (L bis = twice; plicatus = fold): twice plaited or folded

bi-ra'mous (L bi = two; ramus = a branch): referring to appendages of a crustacean with two branches

bi-se'ri-al (L bi = two; series = row, sequence): arranged in two rows, existing in two series

bi'valve (L bi = two; valva = door): bivalve mollusca are all aquatic and, except for a few genera, are marine; any mollusk having

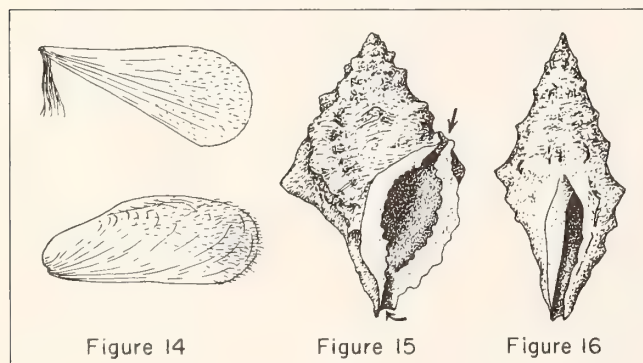


Figure 14

Figure 15

Figure 16



two valves or shells hinged together, as a mussel or clam. The valves are generally connected by an elastic ligament and are closed by one adductor, as in oysters, or by two, as in clams. However, there are also bivalved gastropods (e.g., *Julia*, *Berthellinia*, etc.)

**body whorl:** the basal and usually the largest whorl of a univalve shell; the last whorl of a spiral shell, i. e., from the outer lip back to a point immediately above the outer lip; the last turn of a shell ending with the aperture is usually very capacious, the others are collectively called spire whorls (Fig. 17)

**bo're-al** (Gr Boreas = god of the north wind): of or belonging to the north, northern

**bor'er:** a pelecypod that burrows in stone or in wood, as a shipworm or *Teredo*, a piddock or pholad; a gastropod that bores through the shell of an oyster or other mollusk [e.g., *Urosalpinx cinereus* (Say)]

**boss** (Fr bosse = hump, bump): to ornament with a boss or bosses, a circular prominence, a knob, a stud; **bosselated:** covered with small knob-like projections, composed of or covered with small protuberances

**bot-ry-oid'al** (Gr botrys = cluster; eidos = form): clustered like a bunch of grapes, said usually of minerals

**Brach-i-op'oda** (Gr brachion = the arm; poda = foot): lamp shells; marine animals with a shelly upper and lower valve, not mollusks, although at one time included in that phylum

**bran'chi-ae** (Gr branchia = gills): gills, respiratory organs for breathing the oxygen dissolved in water, as those of crustaceans and mollusks

**breadth:** in pelecypods — the distance between the anterior and posterior extremities of the shell; in gastropods — the diameter of the body whorl at its periphery (Fig. 18)

**bry-o-zo'an** (Gr bryon = moss; zoon = an animal): small aquatic animals forming tuft-like or moss-like aggregate masses; some nudibranchs and some chitons feed on bryozoans

**buc'cal** (L bucca = the cheek): pertaining to the mouth or cheek; **buccal mass:** a bulging, tongue-like object, made up of cartilage and muscle, which supports the center of the radula

**buc-cin'i-form** (L buccinum = a shell-fish, from buccina = a trumpet): resembling the shape of the Buccinidae; **buccinal:** resembling a trumpet in shape

**bulb'ous** (Gr bolbos = a bulb): inflated or swollen like a bulb; **bulbous nucleus:** nucleus slightly larger than the next succeeding whorl

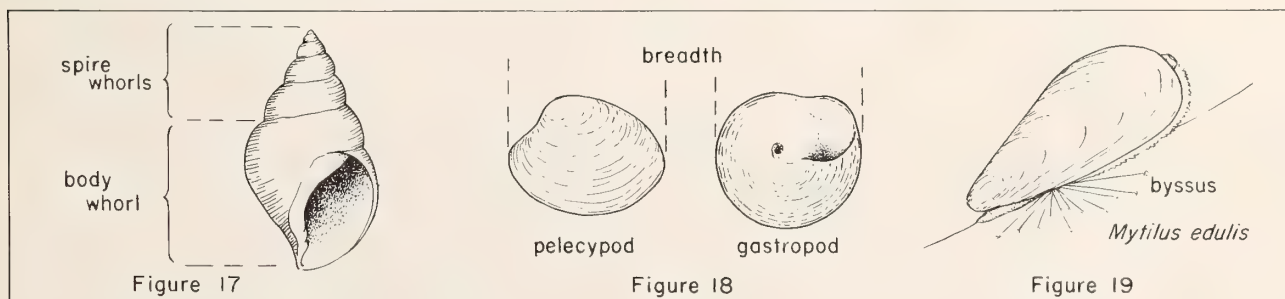
**bul'late** (L bulla = bubble): having a blister-like appearance, swollen, inflated; **bullina:** a small bubble; **bulloid:** like a bubble

**bur'sa** (L bursa = a purse, a pouch): a pouch or sac, a sac-like cavity

**but'tress** (OFr bouterez = push or butt): a radiating ridge on the interior of some pelecypods serving to reinforce the hinge processes; a support

**byssal notch:** a small opening or notch on the ventral margin for the passage of the byssus (e.g., in *Arca*)

**bys'sus** (Gr byssos = a fine flax): the beard, fibers, or small bundle of silky threads secreted by the pelecypod foot by which they attach themselves to rocks and solid objects; usually byssus spinners as *Modiolus*, *Pinna*, and *Mytilus* are inhabitants of the shoreline in situations where at low tide they are exposed above the waters and thus subject to the wash and lifting power of the incoming waves and, but for their anchor-like fastenings, would be torn away from their habitats (Fig. 19)



## C

ca-du'cous (L caducus = falling): having the tendency to fall off early or before maturity, as the nuclear whorls of Caecum  
 cae'cum (L caecus = blind): a blind pouch or cavity open at one end; Caecum: a genus of gastropods

caeno- (Gr kainos = new, recent): a prefix denoting new or recent

cal'car (L calcar = a spur): a spur-like projection; cal'car-ate: having a spur, spurred

cal-ca're-ous (L calx = lime): composed of, containing, or of the nature of limestone or calcium carbonate, a shelly substance; also, some opercula as in Turbo

cal'lous (L callosus = hard skin): coated with callus or a thickened inductura; callosity: a local thickened part of the callus or inductura

cal'lus (L callus = hardened skin): an unusually hardened or thickened part, a smooth shelly layer secreted by the surface of the mantle and spreading from the interior side of the aperture over the columellar lip, called inductura; callum: a sheet of shelly material filling in the anterior gape in adult shells (e.g., Pholadidae)

cal'y-cle (L calyx = cup): a small cap on the umbones

Cam'bri-an Period (Latin name for Wales): lowest division of Paleozoic Era, contains fossils of shallow water invertebrates and calcareous algae

cam'e-o (L cammaeus = cameo): a striated stone, as onyx or agate, or a shell carved in relief, derived from the Arab word signifying bas-relief; the shell is carved in relief so as to show the design in a layer of one color with another color as background (e.g., the cameo shell, Cassis cornuta Linnaeus)

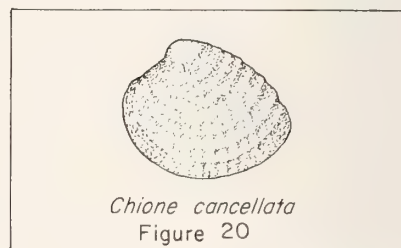
cam'e-ra-ted (Gr kamara = a vaulted chamber): divided into chambers as the Nautilus

cam-pan'u-late (L campanula dim. of campana = a bell): formed like a bell, bell-shaped

ca-nal' (L canalis = channel): a groove, tube, or duct, as for the siphon in gastropods; as the tube-like anterior siphonal canal in Murex; the continuation of the mouth or opening of a shell into a kind of beak which becomes tubular and forms a gutter or groove (e.g., the posterior canal at the upper end of the aperture in Bursa corrugata

Perry); canaliculate: resembling a canal, as deep sutures in some shells, a distinct groove; canalifera: having a canal-like extension of the aperture, small grooves or furrows

can'cel-la-ted (L cancellatus = lattice-like): longitudinal ribs crossed by spiral ones of equal development, cross-barred, latticed; a network formed by small interlacing bars, a reticulation, sculpture lines intersecting at right angles (e.g., Chione cancellata Linnaeus) (Fig. 20)



*Chione cancellata*  
Figure 20

ca-pa'cious (L capax = hold): able to contain or receive much, roomy, large, ample, spacious (e.g., Tonnidae)

cap'il-la-ry (L capillaris = hair): long and slender, like hair, fine, small in diameter though long; having a hair-like bore

cap'i-tate (L caput = head): provided with a knob at the end, having a head, enlarged terminally; capituliform: an enlarged terminal part, as of antennae

ca-pit'u-li-form tooth (L caput = head; forma = form): the broad, flat topped, outermost admedian on either side, as on the radula in Neritidae

capuliform: having the form of a depressed cone, slightly coiled, and an eccentric apex, as Capulus

car'di-form (Gr kardia = heart + form): resembling the shape of a heart

car'di-nal (L cardinalis = pertaining to a hinge, important): applied to the central or principal teeth in the hinge of pelecypods;

cardinal area: a flat or curved surface between the beak and the hinge line; cardinal

margin: the margin containing the interlocking hinge teeth; cardinal plate: the in-

folded dorsal margin interlocking the two valves; cardinal teeth: central teeth of the hinge

car-di-na'lis (L cardinalis = hinge): a muscle that opens the shell in brachiopods

ca-ri'na (L carina = a keel of a ship): a prominent keel or keel-shaped formation, a projection like a spiral ridge, knife-edged



ridge; carinated: angled, applied to any shell having a raised thin ledge, passing round a whorl or any other part of the shell; with a sharp keel or ridge; revolving sculpture; sharp

ca'ri-ous (L caries = decay): decayed, corroded

car'ne-ous (L caro = flesh): of or like flesh, flesh-colored

car-niv'o-rous (L caro = flesh; voro = devour): eating or living on flesh (e.g., Olividae, Muricidae, Conidae)

car'ri-on (L caro = flesh): dead or putrefying flesh of animals

car'ti-lage (L cartilago = gristle): a translucent, elastic substance found in bivalves supplementing the ligament which controls the openings of the valves; cartilage pit: depression for the inner part of the ligament

car'un-cle (L caruncula, dim. of caro = flesh): a fleshy excrescence, as a cock's comb, an outgrowth of shell as on some fresh water pelecypods

cast (Ice. kasta = throw): (fossil) an extraneous substance molded in the interior of a shell, the shell itself having disappeared

cas-ta'ne-ous (L castanea = chestnut): relating to or of the color of a chestnut, sepia color

cau'dal (L cauda = a tail): a tail or tail-like appendage or extremity; cau'date: having the columella elongated at the base

cav'i-ty (L cavus = hollow, excavated): the interior or hollow part of the shell, which is a single, conical, or spiral chamber

cel'lu-lar (L cella = cell): consisting of or containing cells

Cen-o-zo'ic Era (Gr kainos = new; zoe = life): highest segment of the geologic column, Age of Mammals, abundance of pelecypods and gastropods (see appendix)

central area: the upper surface of an intermediate valve of chitons, lying centrally, and sometimes differing in sculpture from the lateral areas

cen'trum (Gr kentron = center): a center or central mass

ceph-al'ic region (Gr kephale = head): of, pertaining to, on, in, or near the head

Ceph-a-lop'o-da (Gr kephale = head; pous = foot): one of the five classes of mollusca — squid or cuttlefish, octopus, argonaut, spirula; some with internal shells, as pens or cuttlebone, others with external shells, as nautilus

cer'as (Gr keras = horn): a horn or horn-like appendage

cer'a-tite (Gr keras = horn): an ammonoid cephalopod found in the Permian Period and typical of Triassic deposits

cer'nu-ous (L cernuus = stooping forward): drooping, bent, having the apex more or less bent downward or inclining

cham'bered (Gr kamara = anything with an arched cover): having divisions across the cavity in the hollow of the shell; separating or dividing the same into chambers, as the Nautilus

chank (Hind. cankh = conch shell): a pear- or top-shaped gastropod which is carved into ornaments and bangles and held sacred by the Hindus; images of the god Vishnu hold a chank shell in one hand; Hindu artists carve the shells and suspend them as oil vessels for temple illumination; a sinistral specimen sometimes found in India, China, or Ceylon is very costly and highly prized (e.g., Xancus pyrum Linnaeus, the pear Turbinella)

chan'neled (L canalis = water pipe): grooved or formed like a channel; passage, with a deep furrow or groove; deeply channeled suture on Busycon canaliculata Linnaeus; the apical or basal channels of Ovula

chi-as-to-neu'ral (Gr chastos = marked with a letter "x"; neuron = nerve): visceral nerve cords which are crossed in certain gastropods

chink (AS cinu = chink, a crack): a long and narrow cleft, crack, slit, as on the margin of the columella in Lacuna, umbilical chink (Fig. 21)

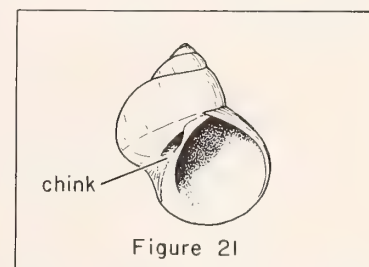


Figure 21

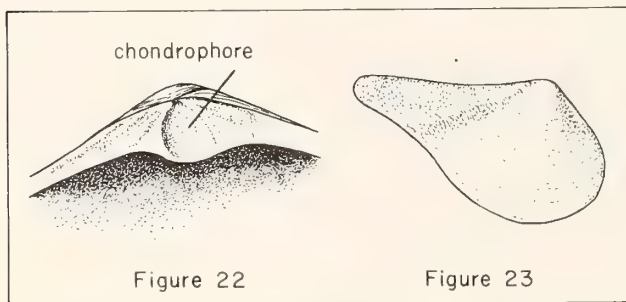
chi'ro-nym or cheironym (Gr cheir = hand; onyma = name): a manuscript name, an unpublished scientific name

chi'tin-ous (Gr chiton = a tunic, a covering): a colorless, hard amorphous compound that forms the principal constituent of the hard covering of insects and crustaceans, the same horny material as in the ligament of

bivalves, the internal shell remnant of the squids, the horny operculum of many gastropods, as Littorina, Architectonica

chi'ton (Gr chiton = a tunic, cloak): the coat-of-mail shells, found mostly on rocky shores in all parts of the world; an armored shell composed of eight pieces bound together in a leathery girdle or muscular belt; nocturnal in habit, sluggish, chitons curl up when disturbed; family Chitonidae in the class Amphineura

chon'dro-phore (Gr chondros = cartilage; phero = bearing): pit or large spoon-shaped form projecting from the hinge plate, usually supplemented by a prop extending to the surface of the valve (e.g., Mactra) (Fig. 22)



chro'ma-to-phore (Gr chroma = color; pherein = to bear): one of the pigment-bearing sacs with contractile walls by which changes of color are effected in various animals

chrys'al-loid (Gr chrysos = gold; oid = like): golden

cic'a-trix (L cicatrix = a scar): a scar or scar-like marking, as that left on the interior of a bivalve shell by the attachment of the adductors

cil'i-a (L cilium = eyelid): hair-like processes on the surface of a cell or organ, shorter and more numerous than flagella; ciliated: having cilia, edged with parallel hairs, fringed, having minute hairs

cinct (L cinctus = encircled): belted or girdled, bound around (rare)

ci-ne're-ous (L cinereus = ashy): ash-gray, ashen, having the color of wood ashes

cin'gu-lum (L cingo = gird, encircle): a colored band, zone, or girdle, or a raised spiral line on certain univalves; cingulate: having colored or other bands, encircled by revolving ribs

cir-cum-bo're-al (L circum = about; Gr Boreas = god of the north wind): pertaining to the north, i. e., distribution around the boreal region

cir-cum-col-u-mel'lar (L circum = about; columnen = column): surrounding the columella

cir-cum-vo-lu'tion (L circum = around; volvo = roll): around an axis or center, rotation, revolution, a whorl, the act of winding

cir'rate (L cirrus = a ringlet, curl, or tuft of hair): having curls or cirri; Cirripedia: a group of crustaceans having a number of long, curled processes for feet, curl-footed, barnacles

cit'rine (L citrus = citron tree): greenish-yellow, having the same color as a lemon

clam (AS clom = clamp): name originally applied to bivalves that burrow in sand or soft mud, as the Barnea; some clams live in fresh water but most live in salt water; many are edible; some burrow into coral, sandstone, wharf piling, clay, other shells, or clean sand; the largest clam is Tridacna gigas Lamarck

clath'rose (L clathri = a trellis, grate): having striae crossing each other at right angles, cancellated with furrows, divided like latticework

clau-sil'i-um (LL claudio = close): a calcareous lid with an elastic stalk that closes the aperture in certain pupoid land snails (e.g., Clausilia)

cla'vate (L clave = club, a knotty stick): with one extremity of the shell attenuated, the other ventricose or globular, club-shaped (Fig. 23)

cline (L clino = lean): a gradual, continuous change of character in continuous populations

closed (L claudio = close): refers to pelecypods, the shells of which do not gape

clyp'e-i-form (LL clypeus = a round shield; forma = form): shaped like a shield

co-a-lesce' (L coalescere = to unite): come together into one, fuse, blend; coalescent: a growing together, uniting, as cardinals of Mactra

co-arc'tate (L coarctatus = press together): crowded together, compressed, contracted, especially at the base, narrowed

coch'le-ate (L cochlea = snail): spirally twisted like a snail shell, screw-shaped

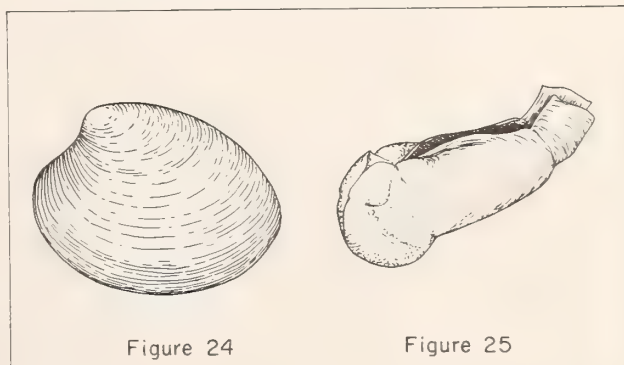
cock'le (ME cokel = a shell): the heart-shaped shells of the Cardiidae family, a large group of worldwide distribution, the edible European bivalve Cerastoderma edule Linnaeus; many fancy articles, such as shell flowers, are made from cockle shells

coe-lo-co'noid (Gr koilos = a hollow; konos = cone; eidos = form): an almost conical



shape but with concave sides  
 coe'lom (Gr koilos = a hollow): body cavity, the space between the viscera and the body wall  
 coinductura (L cum = with; inductura = a coating, a covering): thickened layered shelly coating covering part of the inductura, occur in some bellerophon gastropods  
 collabral (col = a prefix, with or together; L labrum = lip): the growth lines conforming to the shape of the outer lip  
 col'u-brine (L coluber = a serpent): snake-like  
 col-u-mel'la (L columen = column): the axial pillar, the central pillar of a univalve shell around which the whorls are built, extending from the apex to the base; a portion of the columella is seen at the aperture of most spiral univalves; columellar: pertaining to the columella; columellar fold: spiral ridge on the columella projecting into the interior of the shell; columellar lip: the inner edge of the aperture including that part of it which covers the last whorl  
 com-men'sal (L cum = together; mensa = table): two or more different species usually living with one another, but not as parasite-and-host, nor deriving any apparent advantage from the association, as an oyster crab with an oyster or as Myochama on Glycymeris  
 com'mi-nu-ted (L com = together; minuo = diminish): shells reduced to minute particles as in the calcareous beach sand  
 com'mis-sure (L commissura = a seam, a band): the point of union of two bodies, parts, or organs; a junction, seam, closure  
 co'mose (L coma = hair): having hairs, hairy, ending in a tuft, comate  
 com'pli-ça-ted (L cum = together; plica = fold): folded together in an irregular manner  
 com-pressed' (L cum = together; premo = press): flattened laterally or pressed together as in some pelecypods; nearly flat, with reduced thickness, shallow shells (e. g., Pandora, Tellina)  
 con-cam'er-a-ted (L con = together; camera = arch): divided into chambers or cavities; an arched hollow near the hinge area  
 con-cat'e-nate (L con = with; catena = chain): to join or link together; connect in a series; with a series of points placed in regular order  
 con'cave (L con = with; cavus = hollow): hollowed out, excavated; rounded and hollow, as the interior of a sphere

con-cen'tric (L con = with; centrum = center): lines or ridges curving about a center; applied to curved ridges on a bivalve, arcs having the same center; opposed to radial lines or ridges (Fig. 24)  
 conch (L concha = shell): a trumpet shell, a large marine mollusk univalve shell; a shell blown as a horn, the shell blown by Tritons as represented in ancient art [Triton, a son of Poseidon (Neptune) and Amphitrite, represented as a man in his upper parts, with a dolphin's tail, who raised or calmed the billows by blowing on a conch-shell]  
 con-chif'er-ous (L concha = shell; ferre = to bear): producing or having a shell, testaceous  
 con-chi'ol-in (L concha = shell): organic compound forming the thin outer layer of molluscan shells  
 con-chit'ic: limestones and marbles in which the remains of shells are a noticeable feature  
 con-chol'o-gy (L concha = shell; logos = description): the branch of zoology which embraces the arrangement and description of mollusks based upon a study of the hard parts; the science or study of shells and shell-fish; conchologist: a student of conchology, a collector of shells  
 con-chyl-i-o-mor'phite: the fossil imprint of a shell  
 con-col'or (L con = with; coloro = tint): of uniform color, having the same coloration  
 con-cres'cence (L con = together; cresco = grow): a growing together, joining, the union of parts originally unconnected; concretion: any mass of particles united and solidified; formation of a mass  
 con'dyle (Gr kondylos = knuckle): an enlarged and prominent end of a bone, a rounded end (e. g., Parapholas) (Fig. 25)



con'flu-ent (L con = together; fluo = flow): flowing together so as to form one, blended into one, running together without marked line of distinction, as confluent spots

con-ge-ner'ic (L con = together; genus = race): of or belonging to the same kind, class, or stock; generically allied

con'ic (Gr konos = peak): cone-shaped, conical, peaked (e. g., Conus) (Fig. 26)

co-ni-spi'ral (L conus = cone; spira = a coil): with the spire of the shell projecting as a cone

con'ju-gate (L con = together; jugum = yoke): joined in pairs, coupled, paired

con'ate (L con = together; nascor = be born): existing together, as valves firmly joined at birth

con-niv'ent (L con = together; nictu = wink): converging or coming close together; arched inward so that the points meet, as stamens or wings

co'noid (Gr konoeides = cone-shaped): anything having the form of a cone, conical; conoidal: resembling a cone in shape

con-spe-cif'ic: of or pertaining to the same species; members of the same species

con-strict' (L con = together; stringo = draw tight): to compress or draw together at some point; bind, cramp, constrict

con-ter'mi-nous (L conterminus = bordering upon): touching at the boundary, contiguous, having a common boundary line

con-tig'u-ous (L contiguus = touching): touching or joining at the edge; whorls resting upon or touching each other

continuous variation: individuals differing from each other by minute steps, often just barely discernible

con-tort'ed (L con = together; torquere = to twist): twisted or wrenched out of shape or place, distorted

con-tour' (LL contornare = to go around): the exterior surface around the edge of a shell, the periphery

con-tract'ile (L contractus = to draw together): capable of contracting; shorten or draw in to smaller dimensions

con'vex (L convexus = arched, vaulted): curving outward like a segment of a globe or a circle, bulging out (e. g., valves of Cardium) (Fig. 27)

con'vo-lute (L con = together; volvo = roll): to roll together, wind around something; to turn or wind upon itself, with the last whorl concealing the earlier ones (e. g., Ammonite) (Fig. 28)

co-qui'na (Sp shellfish, cockle): a soft rock made up of marine shell fragments, used as a building material

cor'al-line (LL corallinus = coral-red): consisting of coral, resembling coral in color, pinkish-red; corallinite: fossil coral; corallite: an individual skeleton of a coral polyp; coralline zone: from approximately 15 to 50 fathoms

cord (Gr corde = string): coarse, rounded, spiral or transverse linear sculpture on the shell surface; smaller than costa

cor'date (L cordis = a heart): heart-shaped, having the form of a heart; cordiform: heart-shaped (Fig. 29)

co-ri-a'ceous (L coriaceus = leather): tough and leathery, like skin on a chiton or the mantle; leathery texture

cor'ne-ous (L cornu = horn): consisting of horn, of a horn-like texture, as the opercula of some mollusks such as Littorina or Busycon; corniform: horn-shaped, long, pointed

cor'o-na-ted (L corona = crown): having a series of processes forming a crown-like part; bearing a row of tubercles or prominent nodes, especially on the shoulder of the last whorl (e. g., Melongena and Strombus) (Fig. 30)

cor-ro'ded (L corrodo = to gnaw away): eaten away by degrees as the umbones, apices, or other thick parts which are frequently worn away by the element in which the mollusks live

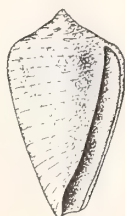


Figure 26

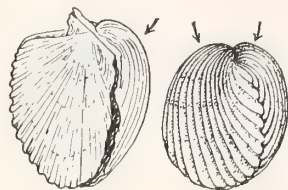


Figure 27

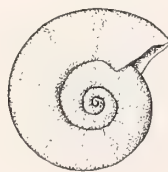


Figure 28

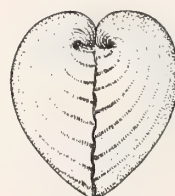


Figure 29



Figure 30



cor'ru-gate (L cor = together; ruga = wrinkle): roughened by wrinkles; to contract into alternate ridges and furrows (e. g., Haliotis corrugata Gray) (Fig. 31)

cor'tex (L cortex = bark, rind): an outer skin, the epidermis; corticate: having a cortex, covered with an epidermis

cos'ta (L costa = rib): rounded ridge on the surface of a shell, larger than a cord; costate: having costa or a rib-like structure; costella: resembling costa, but smaller; costellate: finely ribbed, having costellae (Fig. 32)

cotype: any one of a series of specimens to which equal weight has been given in describing a species

cow'rie or cow'ry (Hind. kauri = a cowrie): the family Cypraeidae; money cowries: Cypraea moneta Linnaeus, formerly used as money in Africa and the South Seas

cras'sus (L crassus = thick, solid): coarse or thick in structure

cra-ter'i-form (Gr krater = a great cup; forma = form): having the form of a crater, cup-shaped, saucer-shaped

cre'rate (L crena = a notch): scalloped or toothed with even rounded notches, having blunt teeth, indented, notched) (e. g., margin of Glycymeris)

cren'u-la-ted (L crena = a notch): finely notched or delicately corrugated, wrinkled on the edges, indented or scalloped margin of a shell, regularly indented; crenula: a small notch (e. g., minutely crenulated ventral margin of Nucula)

cres-cent'ic (L crescens = to grow, increase): shaped like a crescent

crest (L crista = a comb, tuft): crested like the comb of a cock; some oysters are crested (Fig. 33)

Cre-ta'ceous Period (L creta = chalk): extensive chalk deposits, formed largely by microscopic foraminiferan shells, and coal, shale, and sandstone deposits containing

many fossils, largest ammonites, numerous sea urchins, variety of clams, large dinosaurs, and many plants; cretaceous: consisting of or resembling chalk, chalky

cris'pate (L crispus = curled, uneven): having a wrinkled, fluted margin, ruffled, irregularly twisted

crop (AS cropp = craw): a widened part of the esophagus where food may be temporarily stored before being passed on to the stomach

cru'ci-ate (L cruciatus = to torture): cross-shaped

cru'ra (L cruris = the leg); crus: a stalk or peduncle, a limb or support

crus-ta'cean (L crusta = crust): one of the Crustacea, a prime division of arthropods, having a crust-like shell, including crabs, lobsters, and barnacles

cryptic species: two or more closely related species, reproductively isolated although morphologically identical or almost so (= sibling species)

cryptomphalous (Gr kryptos = hidden; omphalous = the navel): the opening of the umbilicus completely obscured by a plug

Cryptozoic Eon (Gr kryptos = hidden; zoe = life): oldest major division of geologic time, from 520 to 3,500 million years ago, Precambrian (see appendix)

cten-id'i-um (Gr kteis = comb): a gill-comb, one of the respiratory organs of mollusks; plural is ctenidia

cu-cul'late (L cucullus = hood): hooded, having a hood-like part or mark (Fig. 34)

cui-rass' (Fr cuirasse = breastplate of leather): a hard covering serving as a protection

cul'trate (L cultratus = knife-shaped): shaped like a pruning knife, sharp edged and pointed

cu'ne-ate (L cuneatus = wedge-shaped): wedge-shaped; cu'ne-i-form: wedge-shaped

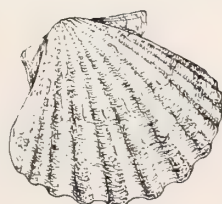
cu'pre-ous (LL cupreus = copper: copper-colored, coppery

cusp (L cuspis = a point): a prominence or point



*Haliotis corrugata*

Figure 31



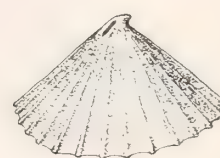
*Pecten subnodosus*

Figure 32



*Ostrea cristagalli*

Figure 33



*Puncturella cucullata*

Figure 34

especially on the crown of a tooth, denticle;  
cuspidate: prickly pointed  
 cu-ta'ne-ous (L cutis = the skin): consisting of, pertaining to, affecting, or of the nature of skin  
 cu'ti-cle (L cutis = skin): the thin outermost layer of skin covering the body of the mollusk, epidermis  
 cy-ath'i-form (Gr kyathos = a cup; forma = form): cup-shaped, a little widened at the top  
 cy-clo'dont (Gr kyklos = circle; dont = teeth): the dentition is characterized by the lack of a flat hinge plate; the teeth curving out from under the umbones and twisted into line in the cardinal margin; this tooth development is believed to be the result of extreme torsion in the dentition of the umbonal extremity over the past ages (e. g., Cardium)  
 cy-dar'i-form (L cydarum = kind of ship; forma = form): globose, orbicular, but truncated at opposite ends  
 cy-lin'dric-al (L cylindrus = a roller, a cylinder): round, like a cylinder with parallel sides (e. g., Oliva); cylindroconic: having the form of a cylinder terminating in a cone  
 cym'bi-form (L cymba = a bowl, boat, hollow vessel; forma = form): boat-shaped, sca-phoid  
 cypraeiform: oval, rolled inward from each side  
 cyrtoconoid (Gr cyrto = curved; konos = cone; eidos = form): almost a cone in shape but with convex sides

## D

de-cid'u-ous (L deciduus = falling off): having the tendency to fall off early or before maturity, as the nuclear whorls of Caecum  
 deck (D dekken = cover): a septum or small sheet of shelly substance in the umbonal region connecting the anterior and posterior ends of a valve; also used to describe the diaphragm of Crepidula (Fig. 35)  
 de-cliv'i-tous (L de = down; clivis = a hill, a slope): same as declivous; sloping downward, gradually descending; opposite to acclivity  
 de-col'late (L de = from; collum = neck): decapitate, cut or broken off as the apex on some land gastropods, worn away at the apex, deprived of apical whorls (e. g., Me-lanias)

de-cor'ti-ca-ted (L de = from; cortex = bark): divested of exterior coating, deprived of the cortex or outer coat; outer layer has been partially or entirely eroded away  
 de-cum'bent (L de = down; cubo = lie): bending down, upright at the base and bending down at the tip  
 de-cus'sa-ted (L decussare = to divide cross-wise in the form of an X): intersected, striations crossing at acute angles, a latticed surface of fine ribs not necessarily at right angles (e. g., radial ribs of Crenella)  
 def-i-ni'tion (L de = off; finis = end): in taxonomic work, the formal statement of characters delimiting the taxonomic category  
 de-flect'ed (L de = away; flecto = bend): bent backward or to one side or downward  
 de-his'cent (L dehisco = to split open): the periostracum which bursts off abruptly (as a capsule when discharging seeds in some plants)  
 de-lim'it-ing (Fr delimiter = to limit): fixing the limits of, marking out the boundaries of, demarcating  
 del-tid'i-um (Gr delta = triangle): the triangular space between the beak and the hinge bone of brachiopod shells, usually covered by a shelly plate, deltidial plates  
 del'toid (Gr delta = a triangle; eidos = form): shaped like a delta, spear-shaped, trowel-shaped, triangular; deltoidal: more or less triangular  
 deme (Gr demos = country, people): a population within a species  
 dend-rit'ic (Gr dendron = tree): branching in form, tree-like; dendrite: a branching, tree-like mark; branched part of a nerve cell  
 dendrogram (Gr dendron = tree; gramma = writing): a tree-like diagram suggesting relationships of species or higher categories, based upon similarities in shape and development  
 den'droid (Gr dendron = tree; eidos = form): shrub-shaped, the shape of a small tree; dendriform (Fig. 36)

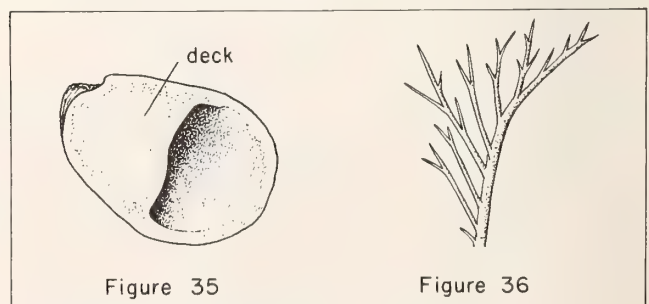


Figure 35

Figure 36



den'tate (L *dentatus* = tooth): points or nodules resembling teeth as in the aperture of some gastropods, tooth-like processes; dental callosity: unshaped thickening that forms the teeth in edentulous pelecypods; dentate-lirate: having teeth and fine raised lines or grooves (Fig. 37)

den-tic'u-late (L *denticulatus* = furnished with small teeth): like fine teeth, having little teeth or raised points; denticles: minute teeth or projecting points; dentiform: with denticles; dentition: arrangement and character of teeth and sockets of pelecypods

de-nu'ded (L *de* = from; *nudus* = bare): without covering of any kind, exposed to view; divested of all covering

de-pau'per-ate (L *de* = from; *pauper* = poor, beggar): to impoverish, exhaust, falling short of the natural size or development from being impoverished or starved; imperfectly developed

de-pressed' (L *depressus* = to press down): lowered in position, pressed or kept down, flattened from above, sunk below the general surface

de-scrip'tion (L *de* = fully; *scribo* = write): a more or less complete, formal statement of characters of a taxonomic category without delimiting it from other categories

Des-mo-don'ta (Gr *desmos* = ligament; *dens* = tooth): an order of bivalves with the hinge lacking lateral teeth but sometimes with rudimentary cardinal teeth; shells vary in shape, generally thin and usually burrowing in sand or mud; usually with well developed siphons (e. g., *Teredinidae*)

des'qua-ma-ted (L *de* = from; *squama* = scale): peeled or scaled off

de-tached' (OFr *destacher* = loosen, unfasten): whorls not touching each other, disconnected, separated (e. g., *Tenagodidae*) (Fig. 38)

de-tor'sion (L *de* = away; *torques* = twist): the act of twisting back or removing torsion; unwinding

de-tri'tus (L *detritus* = a rubbing away): a mass of disintegrated, fragmentary material, bits of seaweed, waste on the ocean floor, food for animals such as *Turritella*

de'vi-ate (L *de* = from; *via* = way): to turn aside from the straight or regular course, as the axis of the protoconch forming a distinct angle with the axis of the teleoconch (see Fig. 38)

Dev-o'ni-an Period (pertaining to Devonshire, southwestern England): period of Paleozoic Era rich in fossil fauna, numerous brachiopods, pelecypods, gastropods, and cephalopods in sandy deposits; Age of Fishes

dex'tral (L *dexter* = to the right): having the aperture on the right side of the shell when the apex is upward, right-handed, coiled in a right-hand spiral, in a clockwise manner; opposed to sinistral (Fig. 39)

di-ag-no'sis (Gr *dia* = between; *gignosko* = know): a formal statement of the characters distinguishing one taxonomic category from closely related categories

di-am'e-ter (Gr *dia* = through; *metron* = measure): the greatest width of the shell at right angles to the shell axis

di-aph;a-nous (Gr *dis* = through; *phaino* = show): showing light through its substance, transparent, clear, pellucid, translucent

di-au'lic (Gr *diaulus* = a double pipe or channel): two separate ducts open to the surface

di-chot'o-mous (Gr *dichotomos* = a cutting in two): regularly dividing by pairs from top to bottom, successive bifurcation, two-forked

did'y-mous (Gr *didymos* = double): twin, formed in pairs, growing double, when a pair of spots touch or are confluent

dif-fract'ed (L *dis* = apart; *frango* = break): bent in opposite directions, separated into parts

dif-fuse' (L *diffusus* = to spread by pouring out): spreading, widely spread out, extended; applied to the aperture of a gastropod when it is spread out or widened

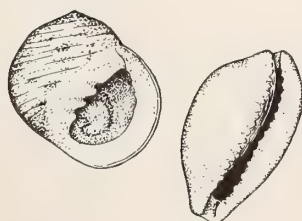


Figure 37



Figure 38

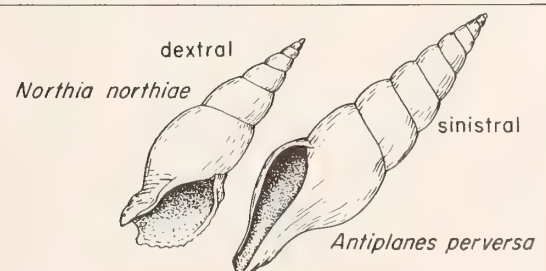


Figure 39

- dig'i-ta-ted (L digitus = finger): fingered or clawed, divided into finger-like parts; digitiform: finger-like, branched out in long points
- di-lac'er-ate (L dis = apart; lacerare = tear): to tear to pieces, tear apart; interrupted or broken markings
- di-la'ted (L di = apart; latus = carried): expanded in all directions as the aperture of some gastropods, distended
- di-mor'phism (Gr dimorphos = two forms): occurrence of two distinct morphological (e. g. different male and female forms = sexual dimorphism; successive generations in the same year, due to seasonal factors, may appear to be different 'species' = seasonal dimorphism) types in a single population
- dim-y-a'ri-a (L di = two; mys = muscle): a general name for those bivalves whose shells are closed by two adductors; dimy-arian
- di-oe'cious (Gr di = two; oikos = house): having the male and female organs present in different individuals, as in the majority of bivalves; opposed to monoecious
- dis'coid (Gr diskos = disk): disk-shaped, having the form of a disk as certain univalve shells with the whorls coiled in one plane; discal: shaped like a disk; discoidal: when the whorls are so horizontally convolute as to form a flattened spire (Fig. 40)
- dis-con-nect'ed: whorls separated as in Spirula spirula Linnaeus (Fig. 41)
- discontinued varices: when the varices of one revolution are not in a straight line with those of the next, as in Tritons (Fig. 42)
- discontinuous variation: individuals of a sample fall into distinct separable classes which do not grade into each other
- dis-crep'ant (L discrepare = to sound differently): discordant, disagreeing, contrary, different; "ears" often discrepant on Chlamys (Fig. 43)
- dis-junct' (L disjunctus = separate): detached; loosely coiled shell with the whorls not touching one another
- disk (Gr diskos = disk): the space between the umbo and the margin of a bivalve shell
- dis'tal (L di = apart; sto = stand): relatively remote from the center of the body or point of attachment
- di-ur'nal (L diurnus = daily): animals active during the daytime; opposed to nocturnal
- di-var'i-ca-ted (L di = apart; varicus = straddling): diverging, meeting in a point as the teeth on the hinge of Placuna; sculpture consisting of chevrons as Acila castrensis Hinds; divaricating lines: to branch off or diverge, fork; divaricator: a muscle that causes parts to separate, as the one that opens the shell in brachiopods
- di-ver'gent (L diversus = turned different ways): differing one from another or from a standard, receding farther and farther from each other, extending in different directions from the same origin; diverging: separating from a point
- Doc-o-glos'sa (Gr dokos = bearing-beam; glossa = tongue): a suborder of dioecious gastropods, limpets, with an entire heart with two auricles, beam-like teeth, lance-like or claw-like in shape, in transverse rows on the radula; the marginals or admedians may be absent (e. g., Patellidae, Acmaeidae, Lepetidae)
- dog-whelk (or dogwinkle): as the genus Thais
- do-lab'ri-form (L dolabra = ax; forma = form): hatchet-shaped, shaped like the head of an ax as the foot of some pelecypods
- do'li-oid (L dolium = a large jar; eidos = form): globose, capacious (e. g., Tonnidae) (Fig. 44)
- dor'mant (Fr dormir = to sleep, be inactive): in the state of torpor or sleep, hibernating, quiescent
- dor'sal (L dorsum = the back): the back edge of a bivalve, in the region of the hinge; the



Figure 40



Figure 41



Figure 42

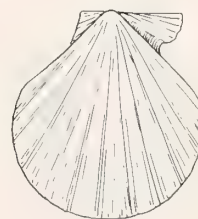


Figure 43



Figure 44



back of a gastropod remote from the aperture; the conical top surface of a limpet; dorsum: the back opposite the aperture of a gastropod

dor-so-ven'tral-ly (L dorsum = back; venter = belly): having two surfaces, a dorsal and a ventral, bifacial; in the axis or direction from dorsal to ventral surfaces

drill (MD drille = hole): a shell such as Urosalpinx cinereus Say which feeds on oysters by drilling holes in their shells

du'pli-ca-ture (L duplicatus = to fold in two): folding backward, folding upon itself, a fold tending backward

Dys-o-don'ta (Gr dys = hard, ill; dont = teeth): an order of bivalves characterized by the absence or near absence of hinge teeth; teeth feebly developed; with a series of denticles along the dorsal margin or small tubercles; anterior muscle is small or absent; the foot usually possesses a byssus (e. g., Mytilidae)

## E

ears: having ear-like appendages, external projections or a triangular prolongation at the umbones of bivalves (e. g., Pecten)

eaves: in chitons, the portions of the tegmentum just over the points where the insertion plate and sutural laminae push from under it; eave tissue: a spongy or porcelainous shell material that forms the eaves

e-cal'ca-rate (L e = priv.; calcar = a spur): destitute of spur or calcar

e-car'i-nate (L e = priv.; carina = a keel): destitute of keel or carina

ec-cen'tric (Gr ek = out of; kentron = center): departing from the usual custom; an operculum is eccentric when the growth is only on one side of a nucleus, to one side of the center

ech'i-na-ted (Gr echinos = hedge hog): spinous, surface of the body covered with spines, such as in sea urchins, echinoderms

e-col'o-gy (Gr oikos = house; logia = to speak); same as oecology: the study of the relationship between organisms and their environment, both animate and inanimate; ecological isolation: interbreeding between two or more sympatric populations is prevented by mating in different ecological niches

ecophenotypic variation (Gr oikos = house; phaino = show; typos = strike): a non-hereditary modification of the phenotype by specific ecological conditions, especially of the habitat

ecotype (Gr oikos = house; typos = strike): races of varying degrees of distinctness, owing the most conspicuous characters to the effects of local environment

ec-to-par'a-site (Gr ecto = outside; parasitos = a parasite): a parasitic animal, such as the small Pyramidellidae, infesting the out-sides of some bivalves, piercing the shell with a buccal stylet, and feeding upon the host

e-den'tate (L edentatus = without teeth): without teeth or folds, as the hinge plate of some pelecypods or the aperture of some gastropods; edentulous: having no teeth

ef'fer-ent (L ex = out; fero = being): carrying or carried outward, discharging; opposed to afferent

ef-fuse' (L ex = out; fundo = pour): the lip is effuse when the basal or anterior extremity is slightly produced, depressed, or reflected as in Melania; having the aperture extended from one end of the shell to the other and open at both extremities; having the lips separated by a groove, expanded (Fig. 45)

e-flect'ed (L e = out; flect = bend): bent abruptly outward, somewhat angularly

el'e-va-ted (L elevatus = to lift up, raise): when the spiral cone advances more in height than in width (Fig. 46)

el-lip'tic-al (Gr elleiptikos = elliptical): oblong with rounded ends, oval shape

e-lon'gate (L e = out; longus = long): drawn out, lengthened, as the spire of some gastropods; in pelecypods, when the length is greater than the height (e. g., Ensis, Solen) (Fig. 47)

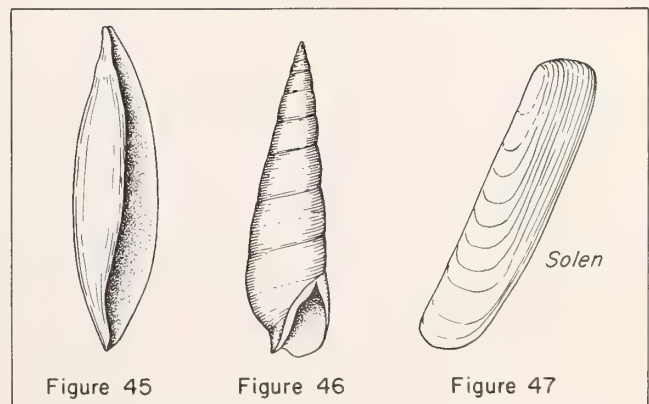
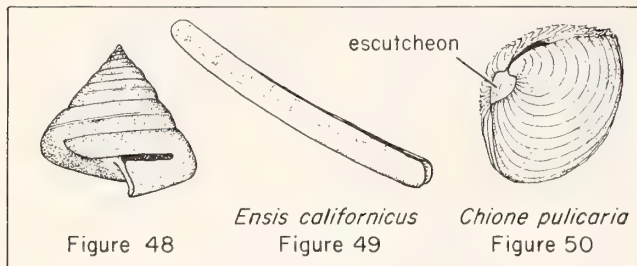


Figure 45

Figure 46

Figure 47

e-mar'gin-ate (L e = from; margo = margin): bluntly notched or hollowed out, having the margin interrupted or notched; the lip is emarginate when incised or slit, as in *Pleurotomaria* (Fig. 48)



em-bryo-on-ic (Gr en = in; bryo = swell): rudimentary, undeveloped, a larval stage as the free-swimming embryo of an oyster; embryonic shell: shell formed before hatching

en-am'el (OFr esmail = enamel): the substance which forms a hard glossy coating

en-ceph'a-la (Gr enkephalos = brain): mollusks possessing a head and usually protected by a spiral shell

en-dem'ic (Gr endemios = native): native, not introduced; having the habitat in a certain region or country

en-do-gas'tric (Gr endon = within; gaster = stomach): the normal, adult gastropod extends backward as it rests on the crawling head-foot mass and the head withdraws into the shell before the foot; opposite to exogastric

en-do-skel'e-ton (Gr endon = within; skeleton = dried body): a bone-like interior framework of an animal such as a cuttlefish; distinguished from exoskeleton

en'si-form (L ensis = sword; forma = form): sword-shaped; two-edged and tapering towards the point (Fig. 49)

en-tire' (L integer = untouched): without a pallial sinus, without sinuosity; the aperture when the margin is without a sinus, siphonal canal, or crenulations

E'o-cene Epoch (Gr eos = early period; kainos = recent): middle division of the Paleogene Period

ep-i-der'mis (Gr epi = upon; derma = skin): an outer skin; skin covering; according to some writers, epidermis is the incorrect name for the periostracum which is the external protective, horny skin covering of a shell

ep'i-phragm (Gr epiphragma = a covering, lid): a sheet of dried mucus across the aperture

of a land snail to prevent loss of moisture during aestivation or hibernation

ep-i-po'di-um (Gr epi = on; pous = foot): a muscular lobe developed from the lateral and upper surfaces of the foot, as the wing-like expansions of a pteropod

e-equal-i-brat'ing (L aequalis = equal; libra = balance): balancing equally

e-qui-dis'tant (L aequus = equal; distans = distant): equally spaced; an equal distance from the same point as the spiral lines on some gastropods

e-qui-lat'er-al (L aequus = equal; latus = side): an equilateral shell is one in which a transverse line, drawn through the apex of the umbo, divides the valves equally (e.g., *Glycymeris*)

e'qui-valve (L aequus = equal; valve = leaf of a door); also aequivalve: when the two valves of a pelecypod are the same shape and of equal size as mussels or *Crenella*

e-ra'di-ate (L e = from; radius = ray): to shoot forth as rays of light; to radiate

e-ro'ded (L e = off; rodere = to gnaw): appearing as if eaten or gnawed away; erose: uneven, gnawed or eaten away

er-yth'ro-stoma (Gr erythos = red; stoma = mouth): red mouth

es-cutch'eon (L scutum = a shield): an elongated or heart-shaped depression behind the ligament in a bivalve; a smooth shield-shaped surface (Fig. 50)

e-soph'a-gus (Gr oisophagos = the gullet): a membranous tube or canal through which masticated food or drink passes from the pharynx to the stomach; esophageal: pertaining to or near the esophagus

es'ti-vate (L aestivare = to spend the summer): to pass the summer in torpor; the dormancy in summer of some land snails

es'u-rine (L esuritus = be hungry): eating, corroding (obsolete)

eurytopic (Gr eurys = broad, wide; topica = local): a group name for animals which range widely in the same community, such as limpets; see stenotopic

eu-thy-neu'rous (Gr euthys = straight; neuron = nerve): in gastropods, straight visceral nerve loops

ev-a-nesce' (L evanesco = vanish): to disappear by degrees, vanish gradually; evanescent: tending to vanish or pass away like vapor

e-vert'ed (L e = out; verto = turn): turned backward or outward as the edge of the outer lip

ev'o-lute (L e = out; volvo = roll): as in ammonites with whorls coiled out of contact



ex'ca-va-ted (L ex = out; cavus = hollow): hollowed out as the columella of some shells

ex-cen'tric (Gr ek = out of; kentron = center); same as eccentric: one-sided, out of the center, not having the same center

ex-curved' (L ex = out; curvare = to curve): curved outward as antennae; excurvate: bent outward

ex-ha'lant (L ex = out; halo = breathe): having the quality of exhaling or evaporating; exhalant canal or channel: a channel between extensions or at the junction of the parietal and outer lips, where the exhalant current leaves the mantle cavity; exhalant siphon: a short outlet for the exhalant current

ex-ig'u-ous (L exiguus = scanty, small): small, slender, diminutive

ex-o-gas'tric (Gr exo = outside; gaster = stomach): found only in the early developmental stage where the gastropod shell extends forward over the head and the foot withdraws into the shell first, normal in the Nautilus; opposite to endogastric

ex-o-skel'e-ton (Gr exo = outside; skeleton = a dried body): the external skeleton, as a shell; an outer skeleton; an external structure that supports the body, commonly called a shell

ex-ot'ic (Gr exotikos = foreign): foreign to that locality, not native; introduced from a foreign country; strange

ex-pand'ed (L expando = spread out): spread out as the lip of some gastropods

ex'pla-nate (L explanatus = to flatten out): the outer lip extending outward and flattened as if marginally dilated

ex-sert'ed (L exsertus = projecting, open): pushed out, protruded from surrounding parts

ex-ten'sile (L ex = out; tendere = to stretch): capable of being thrust out or extended (the sand dollar creeps along beneath the sand with a slow gliding motion by means of the myriads of minute extensile tubefeet which it possesses)

ex-ter'nal (L externus = outward): a shell which contains the animal and is not covered by the mantle

ex-tra'ne-ous growth (L extraneus = foreign): external, having no essential relation to or not belonging to a shell

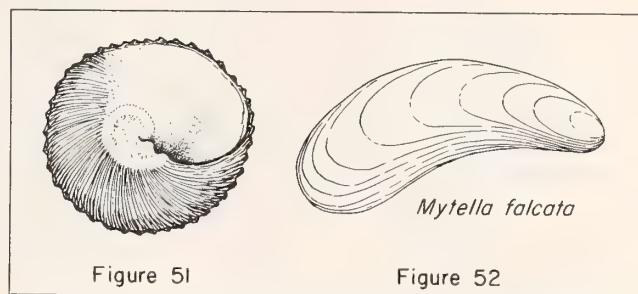
ex-tra-trop'i-cal: not within the tropics

ex-um-bil'i-cate (L ex = out of; umbilicus = navel, venter): destitute of umbilicus (Fig. 51)

## F

fac'et (Fr facette = face): a small surface

fal'cate (L falcatus = sickle): scythe-shaped, new moon-shaped, hooked; falciform: in shape of a sickle, curved like a sickle (Fig. 52)



false umbilicus: a cavity or depression in the base of the last whorl, a pseudumbilicus  
farc'tate (L farctus = to stuff): filled full, distended; to swell out

fas'ci-a (L fascia = a band): a broad and well-defined band of color, striped; fasciated: marked with transverse bands of color

fas-cic'u-la-ted (L fascis = a bundle): a bundle of fibers, arranged or growing in a close cluster or bundle; a little bunch of hairs or bristles against each end of each valve characterizing some species of chiton

fas'ci-ole (L fascia = a band): a small band; one of the bands of minute spine-bearing tubercles in spatangoid sea urchins; a distinct band of color; a spiral band formed in gastropods by the successive growth lines on the edges of a canal; fascio-maculata: with spots disposed in bands; fascio-punctate: ornamented with colored points disposed in bands

fath'om (AS faethm = the space reached by the arms extended, an embrace): a nautical unit of measure, six feet, used principally for measuring cables and the depth of the ocean by means of a sounding line

fau'ces (L fauces = the throat): throat; that portion of the interior of a spiral shell which can be seen by looking into the aperture

fau'na (LL fauna = sister of Faunus, god of agriculture and of shepherds): the animals living within a given area or existing within a stated period

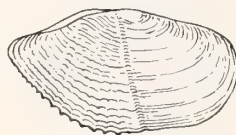
fa-ve'o-late (L favus = honeycomb): pitted, having depressions or cells resembling those of a honeycomb; favose: producing a honeycomb-like incrustation

- fe'cal (L faex = dregs): sediment, refuse, or excrement; feces: the alimentary refuse ejected from the anus
- fe-nes'tra-ted (L fenestra = a window): a window-like opening or hole, a foramen
- fente (OFr fente = a hole): an opening or slit which appears on the slopes of bivalves, near the hinges, when the valves are closed (Fig. 53)
- fer-ru'gi-nous (L ferruginus = iron rust): rust colored, brownish or yellowish red
- fi'brous (L fibra = fiber): composed of or having the character of fibers
- fil'i-form (L filum = a thread; forma = form): thread-shaped, long and slender and of equal thickness from top to bottom, thready; filose: having a thread-like appendage, terminating in a thread-like process
- fil'lets (L filum = a thread, band): bands of fibers
- fim'bri-a-ted (L fimbriatus = fringed): having a fringed edge or border (e. g., Zirfaea crispata Linnaeus) (Fig. 54)
- fis'sile (L fissilis = cleave, split): cloven, capable of being split or separated into layers, divided into parallel lamellae
- fis'sure (L fissura = a cleft, split): a little slit, narrow opening, cleft, crevice, furrow, as Tenagodus squamatus Blainville; fissate: deeply cleft, nearly split
- fis'tu-lar (L fistula = a tube, a pipe): resembling or of the nature of a fistula, a reed or pipe, hollow organ; fistulous: having the form or nature of a fistula (Fig. 55)
- fla-bel'li-form (L flabellum = a small fan; forma = form): radiating structure from a single point as the base or apex, fan-shaped
- flac'cid (L flaccus = flabby): lacking firmness or elasticity; relaxed, flabby, limber
- flag'el-late (L flagellum = a whip): having flagella or whip-like processes, a lash-like appendage as the terminal part of an antenna
- flam'mules (L flammula = a small flame): spots of color resembling a small flame, reddish, tinged with red
- flange: a projecting rim, edge, or an external or internal rib (Fig. 56)
- flar'ing (Norw. flara = blaze): to open or spread outward, to project outward, a spreading from within outward, as a lip
- fla'vous (L flavus = golden yellow): yellow; flavescent: growing yellow, turning yellow
- flex'u-ous (L flexuosus = full of turns): winding or bending gently to and fro in opposite directions, zigzag
- flex'ure (L flexura = a winding): the progressive folding or warping of one or both of the valves
- floc'cu-lent (L floccus = lock of wool): clinging together in bunches; resembling wool, a loose tuft like wool
- flu'vi-a-tile (L fluvius = a river): living in rivers; growing near or belonging to rivers or fresh water, existing in a river
- fold (AS folde = a fold): one part doubled over another, a spiral ridge on the columella projecting into the interior of the shell
- fo-li-a-ceous (L folium = leaf): leaf-like, flattened, projecting like tiles; sculpture that has a leaf-like appearance, as the foliations on Chama macerophylla Gmelin; foliated: consisting of laminae or thin plates (Fig. 57)
- foot: the muscular undersurface of the body of a mollusk upon which the animal rests or moves; fleshy organ of locomotion
- fo-ra'men (L forare = to bore): an orifice or short passage, an opening through a bone or shell, a round opening at or near the beak of a brachiopod, accommodating the pedicle; foramina: small openings especially in shells of Foraminifera
- for'ni-ca-ted (L fornix = a vault, an arch): concave within, convex without; arched, vaulted; fornix: the cavity on the inside under the hinge of a bivalve, the upper or convex shell in an oyster, the more arched valve of a bivalve that has unequal valves
- fos'sa (L fossa = a ditch, a trench): a shallow depression or cavity as in Cuspidaria; fossette: a dimple, pit-like or small de-



*Papyridea aspersa*

Figure 53



*Zirfaea crispata*

Figure 54



Figure 55



Figure 56



Figure 57



pression, a depression for the resilium; the fossettes are placed at the hinge in some bivalves; fossula: a little fossa or small pit with reduced partitions (Fig. 58)

fos'sil (L fossilis = dug out): any hardened remains or traces of plant or animal life of some previous geological period, preserved in rock formations in the earth's crust

fo've-o-late (L fovea = a small pit): having foveolae or little pits or depressions

fringe (L fimbriae = a fringe, border): edging, type of epidermis which extends over the edge of the mantle

fron-dose' (L frond = leaf): more or less divided into leaf-like expansions as many Murex species (Fig. 59)

fru-giv'o-rous (L frux = fruit; vorare = to devour): feeding upon succulent fruits

fry (ME fry = offspring): the young or recently hatched brood of fishes and oysters

fu-ga'cious (L fugio = to flee): having a tendency to flee away or disappear; not permanent, falling or perishing very early, lasting but a short time

ful'crum (L fulcio = prop up): the support on or against which a lever rests; the portion of a pelecypod to which the cartilage is attached

ful-gu-ra'tions (L fulgeo = flash): the act of flashing or lightning, to throw out flashes

fu-lig'i-nous (L fuligo = soot): of, pertaining to, or like soot or smoke, or having the color of soot; dark colored, sooty opaque brown

ful'vous (L fulvus = deep yellow): orange in color, reddish yellow, tawny, rust color, reddish brown

fu-nic'u-lar (L funis = a rope, a cord): pertaining to a cord, shaped like a small cord or band; funicle: a narrow ridge of callus spiraling into the umbilicus as in Naticidae; funiculate: forming a narrow or slender ridge

fur'row (AS furh = a furrow): a gutter; longitudinal shallow groove which, when bivalves are closed, runs parallel to the hinge

fus'cous (L fuscus = dark, dusky): brown or grayish black, tawny, dusky; fuscescent: dark brown

fu'si-form (L fusus = a spindle; forma = form): spindle-shaped with a long canal and an equally long spire, tapering from the middle toward each end; applied to univalves (e. g., Fusinus); fusoid: spindle-form (Fig. 60)

## G

gan'gli-on (Gr ganglion = a tumor): a well defined collection of nerve cells and fibers forming a subsidiary nerve center; plural ganglia

ga'ping (Ice. gapa = to yawn, gape): an opening somewhere along the margin of a bivalve shell, the edges of which do not naturally shut tightly together, as in soft shelled clams; gapers (e. g., Mya, Solen, Ensis) (Fig. 61)

Gas-trop'o-da (Gr gaster = stomach; pous = foot): a class of mollusks; a scientific term for univalves with the stomach situated in the region of the foot, shell in one piece, usually spirally coiled, unsymmetrical; living in the sea, fresh water, and on land; herbivorous and carnivorous

Gause's rule: a theory holding that no two species with identical ecological requirements can coexist in the same place

ge-lat'i-nous (L gelare = to congeal): like jelly, as the eggs of some mollusks

gem'i-nate (L geminus = twin, two-fold): to double; occurring in pairs, twins; duplicating

gem'mule (L gemma = a bud): a bud-like outgrowth which becomes an independent individual; gemmate: to put forth buds



Figure 58

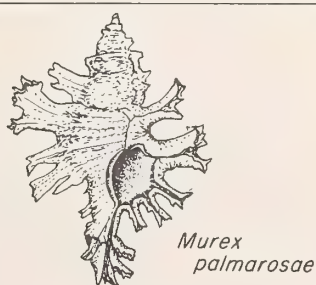


Figure 59

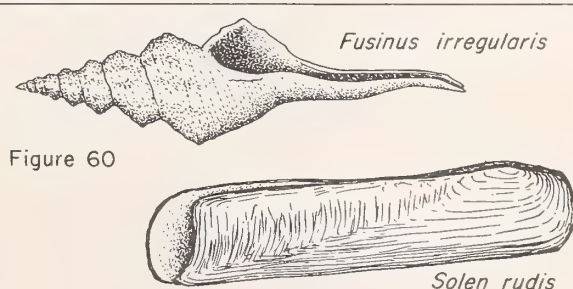


Figure 60

Figure 61

generitype (now obsolete): see type species

generotype (obsolete): see type species

genetic isolation: interbreeding between two or more populations is prevented by sterility barriers

ge-nic'u-late (L genu = the knee): to bend or be bent abruptly like a knee joint

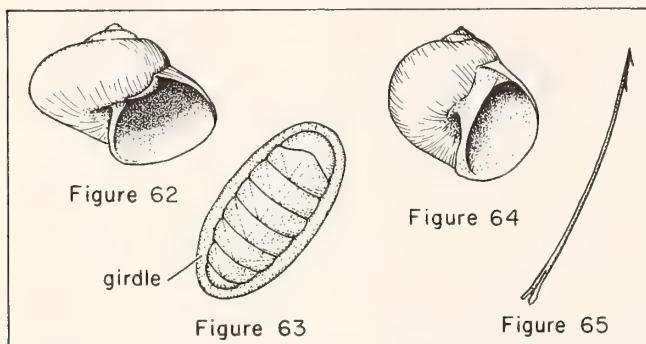
gen'o-type: see type species for taxonomic meaning of term; biologically, this refers to the genetic constitution of an organism regardless of the outward appearance (phenotype) of the same

ge'nus (L genus = race, tribe): a taxon including one to many species of presumed common phylogenetic origin, separated from related but similar taxa by a decided gap

ge-oph'i-lous (Gr ge = earth; philo = to love): ground loving, as land snails

ge-ron'tic (Gr geron = an old man): decadent, deteriorating

gib'bous (L gibbosus = hunched): very much rounded as the whorls in some snails; hump-backed, irregularly rounded, bunched out, embossed, swollen, inflated (Fig. 62)



gill (ME gile = a gill) or ctenidium, plural ctenidia: an organ for breathing the air dissolved in water; the respiratory organ of a mollusk

gir'dle (AS gyrdel = a girdle): a flexible, leathery, muscular integument holding the chiton valves in place, often ornamented with scales, spicules, or hairy processes (Fig. 63)

giz'zard (L gigeria = cooked entrails of poultry): a thickened muscular stomach designed for crushing food; a peculiar stomach paved with calcareous plates, as in Bullidae, being strong enough to crush small shellfish

gla'brous (L glaber = without hair, smooth): without hair, smooth surfaced

gla'di-us (L gladius = a sword): internal shell, the horny endoskeleton or pen of a cuttlefish

gland'i-form (L glans = an acorn; forma = form): acorn-shaped

glass'y (AS glaes = glass): vitreous, transparent, pellucid, clear (e. g., Vitrinidae — minute land snails; Atlanta peroni Lesueur — pelagic sea snail)

glau'cous (L glaucus = bluish-green): a sea-green or pale bluish-green color

glo-big-e-ri'na (L globus = a round body; gerere = to bear): a genus of minute pelagic Foraminifera with globose calcareous shells which live abundantly at or near the surface of the sea; their dead shells, falling to the bottom, make up a large part of the soft chalky mud which covers vast areas of the depths of the ocean and is called globigerina ooze

glo'bose (L globus = a sphere, a ball): rounded, sphere-shaped, like a globe or ball, nearly globular, subspherical; globular: spherical (e. g., Polinices) (Fig. 64)

glo-chid'i-um (Gr glochis = arrow-point): the much modified larvae of certain fresh water clams (Anodonta); these larvae are liberated by the female when a fish swims near by, and they then attach themselves to the gills or fins of the fish where they become encysted; after a parasitic existence for a variable period of time, these larvae finally emerge as young mussels

glo'chis (Gr glochis = arrow-point): a barbed hair, bristle, spine, point, or the like, as the radula in Conus (Fig. 65)

glom'er-ate (L glomus = a ball): to mass, compactly or densely clustered; to collect into a spherical form or mass

gon'ad (Gr gonos = seed): a generative tissue which eventually becomes a testis or ovary, a germ gland; gonoduct: an oviduct or seminal duct

go-ni-a-ti'te (Gr gonia = angle, corner): extinct Paleozoic ammonoid cephalopod, appearing in Middle Devonian Period

grac'ile (L gracilis = slender, thin): gracefully slender or slight

gra'date (L gradus = step): arranged in a series of rising steps as the whorl shoulders

grained (L granum = grain, seed): dotted with small tubercles or grain-like elevations

gran-o'sus (L granosus = full of grains): resembling a string of beads or grains, covered with minute grain-like elevations

gran'u-la-ted (L granum = a seed): covered with minute grains or beads or small nodules; granulata: sand-like roughness; granule: a very small or minute elevation; pustular surface sculpture; granulose: resembling grains, as the valve surface of Poromya and Euciroa



gre-ga'ri-ous (L gregarius = a flock, herd): having the habit of associating in flocks, herds, or companies, living in colonies with others of the same species (e. g., Turritella, Pteropoda)

gris'e-ous (LL griseus = gray): white mottled with black or brown, light gray, bluish gray

growth lines: lines on the shell surface indicating rest periods during growth, denoting a former position of the outer lip; growth rugae: undulations or wrinkled ridges on the shell surface formed by a previous position of the outer lip (Fig. 66)

gu'lar (L gula = throat): in mollusks referring to the innermost part of the aperture (Fig. 67)

gut'tate (L gutta = a drop): spotted as if sprinkled with drops of color

gut'ter (OFr guttière = a gutter): the elongated projection beyond the mouth in some Murex (Fig. 68 ); guttered

Gym-no-glos'sa (Gr gymnos = destitute of; glossa = tongue): a suborder of gastropods in which the radula and jaws are wanting and not needed since they are parasitic on star fish and sand dollars (e. g., Pyramidellidae, Eulimidae)

gy-ra'tory (Gr gyros = circle): moving in a circle, having a circular or rotary motion

## H

hab'i-tat (L habito = habit): the region where a race, species, or individual naturally or usually lives or is found

ha'li-o-toid (Gr halos = the sea; otos = ear): ear-shaped, typical of the Haliotidae, commonly called sea ears (Fig. 69)

ham'a-type (Gr hama = together + type): a specimen from the type lot of a species, not used as holotype or paratype; a special group of topotype; a term no longer used

has'tate (L hasta = a spear): triangular or halberd-shaped with the base diverging on each side into an acute lobe; spear-shaped

head valve: the anterior valve of chitons (Fig. 70)

hec-to-cot'y-lus (Gr hekaton = a hundred; kotyle = a small cup): one arm of the male cephalopod that serves as an instrument of copulation

height: in gastropods, the greatest length parallel to the shell axis through the columella; in pelecypods, the greatest vertical dimension through the beak at right angles to a line bisecting the adductor scars (also called altitude, but the term height is preferred)

helico-, helic- (Gr helix = spiral): a prefix used to signify a spiral; helicocone: an expanding cone-like tube, closed at the apex and open at the other end; the usual form of gastropods

hel'ic-al (Gr helix = a spiral): spirally coiled, following the course of a spiral; helicoid: a geometric term not suitable for describing the form of a gastropod shell; heliciform: a line, or the like, curved into a shape such as it would assume if wound in a single layer around a cylinder, a form like a screw thread (Fig. 71)

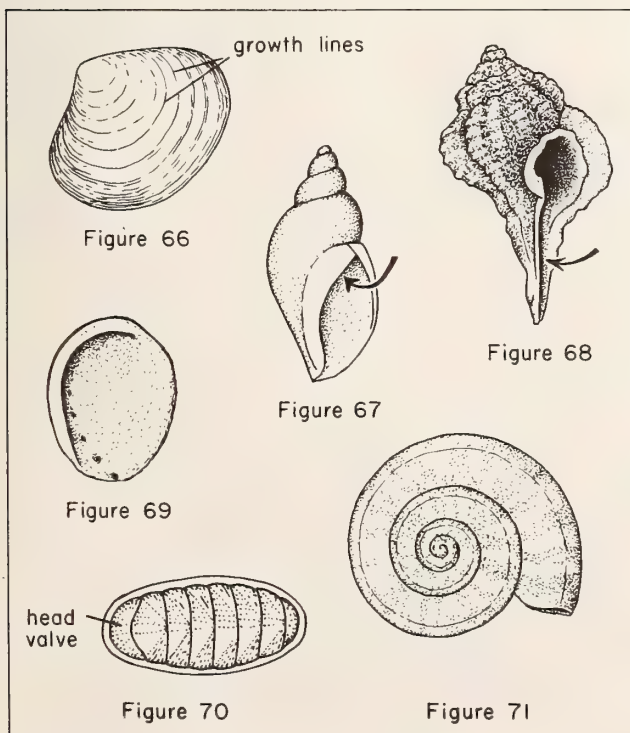
he'lix (Gr helix = anything spiral): a common garden snail (e. g., Helix pomatia, Helix aspersa)

hel'met shell (AS helm = helm, a covering): the genus Cassis; some species, as Cassis cornuta Linnaeus, used as the material on which cameos are sculptured

hemiomphalous (Gr hemi = half; omphalos = the navel): when the opening of the umbilicus is partly plugged with shelly matter

hem-i-spher'i-cal (Gr hemi = half; sphaira = sphere): a half sphere

her-biv'o-rous (L herba = grass, herbage; vorare = to devour): feeding on vegetable



matter, eating or living on plants (e. g., *Strombus*, *Acmaeidae*)

her-maph'ro-dite (Gr Myth = Hermaphroditus, the fabled son of Hermes and Aphrodite): having the sexes united in the same individual as in some mollusks (e. g., in certain species of *Pecten*, *Tridacna*, *Teredo*, *Tivela*, oysters)

her'mit crab: a crustacean with a soft abdomen; for protection it thrusts this part into various empty univalve shells, carrying this habitation with it and changing to a larger shell as it increases in size

Het-er-o-don'ta (Gr heteros = different; dens = tooth): an order of bivalves, usually with few interlocking teeth, consisting of cardinals and laterals, which may be reduced or even absent; there are two adductors, and the mantle is furnished with siphons (e. g., *Tellinidae*)

het-er-o-ge'ne-ous (Gr heteros = other; genos = kind): dissimilar, possessing different characteristics; opposed to homogeneous

het-e-ro-my-a'ri-an (Gr heteros = different; mya = muscle): a group of *Bivalvia* having unequally developed adductors (e. g. *Mytilidae*)

het-er-o-pod (Gr heteros = different; pous = foot): sea snail with a compressed foot adapted for swimming, pelagic in the warmer seas (e. g., *Carinaria lamarcki* Peron & Lesueur)

het-er-os'tro-phy (Gr heteros = different; strophe = turn): a turning in a contrary direction, reverse or left-hand coiled, as in certain univalve shells as some *Busycons*; also applied to protoconchs (Fig. 72)

hex-ag'o-nal (Gr hex = six; gonia = corner, angle): six-sided, having six sides and six angles (e. g., apex of *Dentalium floridense* Henderson)

hi-a'tus (L hiatus = to gape): to gape, a gap or opening, a foramen

hi-ber-na'tion (L hibernans = to pass the winter): suspended animation during dry or cold weather; inactivity; to pass the winter in a torpid condition or in seclusion

hinge (ME hengen = hang): the interlocking toothed devices in a bivalve; hinge line: the edge of a bivalve shell along which the two parts are held together (Fig. 73); hinge plate: the dorsal margin carrying the hinge teeth (Fig. 74); hinge teeth: interlocking teeth that unite the valves

hir-sute' (L hirsutus = rough, shaggy): covered with coarse hairs or hair-like processes, set with bristles, shaggy

his'pid (L hispidus = hairy, prickly): densely covered with a hairy periostracum, rough with minute spines or bristles

hol-o-se-ri'ceous (Gr holos = whole; serikos = silken): covered with minute silky or shiny hairs, having a silky appearance

ho-los'to-mate (Gr holos = whole; stoma = mouth): having the mouth of the shell rounded or entire, without a canal, notch, or any extension; holostomatous (Fig. 75)

hol'o-type (Gr holos = whole + type): the original type; a single specimen upon which a species is based

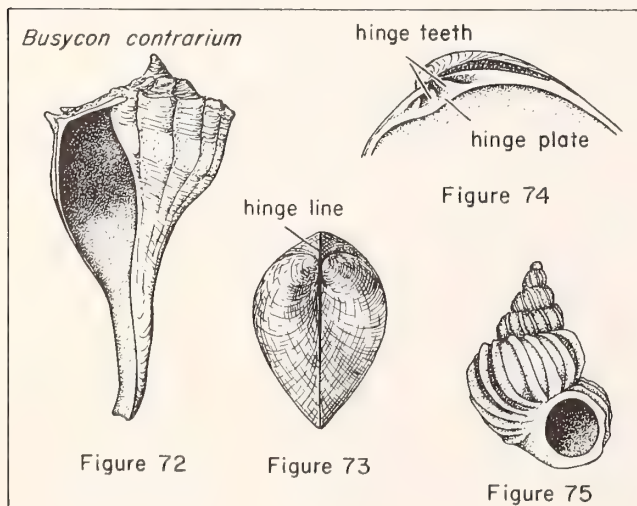
homeostrophic (Gr homoios = like; strophe = turn): having the teleoconch and the protoconch whorls clearly coiled in the same direction

ho'me-o-type (Gr homoios = same + type): a specimen which has been carefully compared with and identified with an original primary type

ho-mo-ge'ne-ous (Gr homos = same; genos = race): having a resemblance in structure due to descent from a common progenitor; of the same composition or structure throughout, uniform, as an inner porcelainous layer of shell with no visible structure; opposed to heterogeneous

ho-mol'o-gous (Gr homos = same; lego = speak): corresponding in structure, identical in nature, makeup, or relation

hom-o'nym (Gr homos = same; onyma = name): the name of more than one object; the latter of identical names given to two or more different genera or species





hy'a-line (Gr hyalos = glass): glossy or transparent, a glassy surface, transparent like glass or water

hy'brid (L hybrida = a mongrel): mixed, interbreeding, the offspring of an animal produced by the crossing of different species, as found in some limpets

hy-droph'a-nous (Gr hydro = water; phanerus = visible): made transparent when immersed in water

hy'per-stroph'ic (Gr hyper = over; strophe = turn): an apparently sinistral shell with a dextrally organized animal (ultradextral); a seemingly dextral shell with a sinistrally organized animal (ultrasinistral); usually detected only from a study of the soft parts

hypodigm: the entire known material of a species available to the taxonomist

hy'op-plax (Gr hypo = under; plax = flat and broad): an accessory shell piece between the valves ventrally on some burrowing clams

hypostracum (Gr hypo = under; ostrakon = shell): refers to the lowest ventral calcareous layer of a chiton valve

hy'po-type (Gr = under, less than + type): not from the type locality; a figured or listed specimen

## I

-idae: a suffix to the stem name of a genus to denote the family (e. g., Patellidae, Conidae); see -acea and -inae

i-den'tic-al (L idem = the same): uniform with something else in quality, condition, appearance, as when a fossil form is perfectly similar to a recent species

im'bri-ca-ted (L imbricatus = to cover with gutter tiles): overlapping one another at the margins, shingle-like, to lay or arrange regularly so as to overlap one another, as the ribs on some *Chlamys* (Fig. 76)

im-bued' (L imbui = moisten): impregnate by absorption, colored more or less deeply in the substance of the shell

im-mac'u-late (L in = not; maculatus = spotted, mottled): without spots or mottling, without blemish, not spotted

im-mar'gin-ate (L in = not; marginatus = to enclose with a border): having no elevated or colored margin or rim

im-mersed' (L in = in; mergo = to dip): ligament deeply impressed; apex concealed by subsequent whorls, involved deeply (Fig. 77)

im-per'fo-rate (L in = not; perforatus = to bore through): not perforated or umbilicated; when the spire is quite flat, the umbilicus vanishes entirely; when the whorls are so compactly coiled on an ascending spiral that there is no umbilicus, the shells are termed imperforate; the term anomalous is preferred (Fig. 78)

im-pressed' (L in = in; premo = to press): marked by a furrow, sunk below the surface as the spiral lines on some univalves (Fig. 79)

im-punc'tate (L in = not; punctum = a point, a puncture): without pits, spots, or holes

-inae: a suffix used in forming Latinized names of subfamilies (e. g., Fissurellinae, Diodorinae); see -idae and -acea

in-ae-qui-par'tite (L in = not; aequipartus = equal): when one end of a bivalve is longer than the other

in-ar-tic'u-late (L in = not; articulatus = jointed): not jointed or fitted together; inarticulate hinge: having no visible teeth or furnished only with callosity

in-cised' (L in = into; caedo = cut): having deep notches; cut into deeply; sculptured with sharply cut grooves

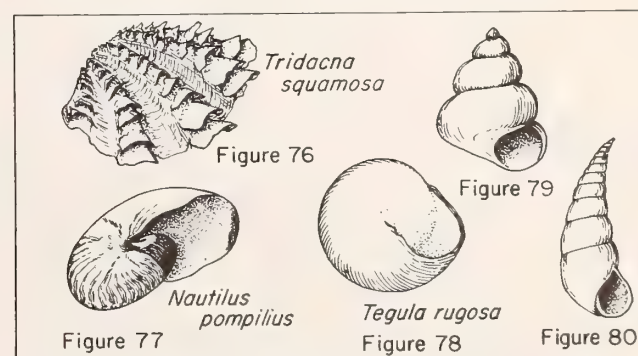
in-ci'sure (L incisus = cut): a cut, an incision, notch

in-cras'sate (L in = in; crassus = thick, solid): thickened, to make or become thick or thicker

in-cre-men'tal lines (L incrementum = growth, increase): lines or faint marks on the shell indicating the growth; shells grow at intermittent periods with intervals of absolute rest

in-crus-ta'tion (L in = on; crusta = rind, bark, crust): to cover with a crust or hard coat; a deposit of calcareous matter upon the shell

in-curved' (L incurvus = bent, bowed, curved): the state of being curved or bent, bent over as the apex in some shells (Fig. 80)



in-dent'ed (L in = in; dens = a tooth): notched, abruptly pressed inward; a cut or notch in an edge or border

in-dig'e-nous (L indigena = native): native to the country, originating in a specified place or country

inductura (L inductura = a coating, a covering): a smooth shelly layer secreted by the mantle spreading from the interior side of the aperture and over the columellar lip and sometimes over the shell exterior; callus

in-e-qui-lat'er-al (L in = not; aequus = equal; latus = side): having the anterior and posterior sides of the valves unequal; the umbones nearer one end than the other; valves dissimilar in shape and size (Fig. 81)

in-e'qui-valve (L in = not; aequus = equal; valva = leaf of a door): when one valve is larger than the other or more convex or of a different form from the other; unequal valves as the shell of an oyster, the left valve being larger; the right valve of *Corbula* is larger; the right valve in *Pectens* is convex (Fig. 82)

in-fla'ted (L inflatus = blown up): applied to rotund shells of thin structure, swollen, increased unduly, distended, ventricose (e.g., *Tonnida*) (Fig. 83)

in-flect'ed (L in = in; flecto = bent): turned in, margin turned inward, a bending or bend, inflexed; bend inward or downward (Fig. 84)

in-fract'ed (L infractus = break): bent inward as if broken, bent inward abruptly, like a bent knee, geniculate

in-fra-me'di-an (L infra = below; medius = belt): relating to a belt or zone along the sea bottom which is between 50 and 100 fathoms in depth

in-fra-su'tur-al (L infra = below; sutura = seam): below the seam or suture

in-fun-dib'u-li-form (L in = into; fundo = pour; forma = form): funnel-shaped; the siphon or funnel of a cephalopod

in-ha-lant (L in = in; halo = breathe): to breathe

in; inhalant siphon: a tube-like organ along which water, containing oxygen, is drawn into the mantle cavity

inner line: the part of the peristome against the pillar (Fig. 85)

in-o-per'cu-late (L in = not; operculum = a cover, lid): lacking an operculum, as a garden snail

insertion plates: narrow marginal extensions of the articulamentum of the valves of chitons projecting into the girdle (Fig. 86)

inshore: being or occurring near the shore, in the water near the shore or within a certain distance from it

in-spis'sate (L in = in; spissus = thick, dense): to give greater consistency to, to thicken

in-te-gri-pal'li-ate (L integer = whole, entire; pallium = mantle): having a pallial impression entire; a bivalve shell without a sinus, as clams or oysters

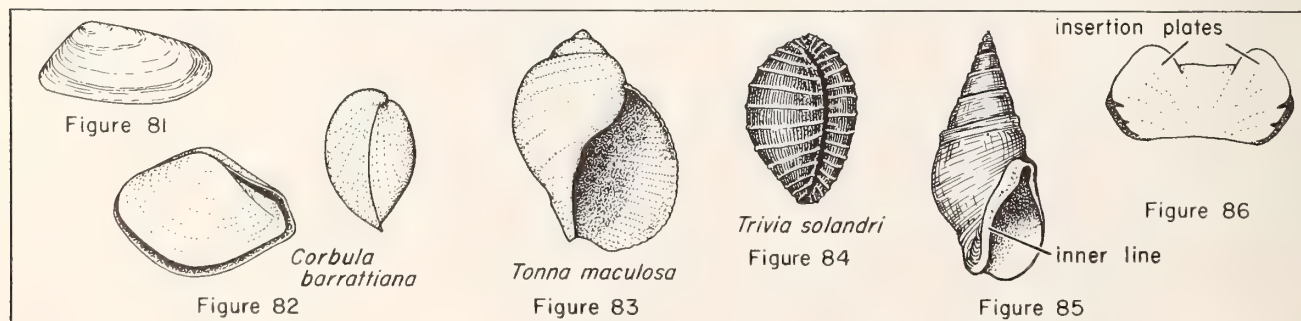
in-teg'u-ment (L in = upon; tegulum = a covering): a natural outer covering, as the skin of an animal, epidermis

in-ter'ca-lar-y (L intercalaris = that which is inserted): inserted or introduced in the midst of others; intercalated: to insert or interpolate; intercalation: growth which takes place other than at the apex or in the usual place

in-ter-cos'tal (L inter = between; costa = a rib): placed or occurring between the ribs; intercostate: between the ribs or ridges

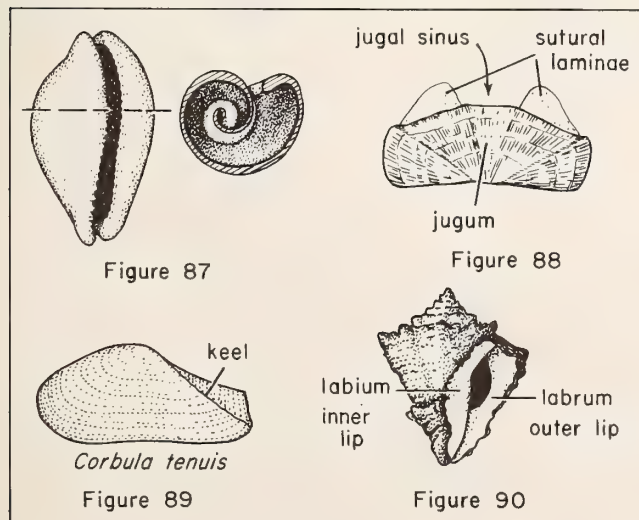
in-ter-med'i-ate valves (L inter = between; medius = middle): the six valves between the anterior and posterior valves of chitons

in-ter'nal (L internus = inward): a shell is said to be internal when enclosed within the organism or mantle of a mollusk (e.g., a pen of *Sepia*, or the internal shell *Spirula spirula* Linnaeus); internal cast: the mold formed inside a fossil shell by an extraneous substance which entered the shell; internal ligament: the ligament of a bivalve placed within the hinge and not visible when the valves are closed





- in-ter-spa'ces (L inter = between; spatium = space): intervening space, spaces between ribs, shallow and narrow space or channels between ribs
- in-ter'-sti-ces (L interstitium = a space between): crack, crevice, chink, a narrow space between the parts of a body or things close together; interstitial: pertaining to, existing in, or forming an interstice
- intertidal zone: the area bounded by the high and low tides
- in'ter-val (L inter = between; vallum = wall): the space between elevations or depressions, distance between points
- in-tor'tion (L in = in; torqueo = twist): a turning or twisting toward one side or the other, or in any direction from the vertical
- in-torse' (L intro = inwardly; versus = turn): turned inward or turned toward the axis
- in'vo-lute (L in = in; volvere = to roll): the whorls nearly or entirely concealing the axis or earlier volutions, the outer lip rolled inward, as in *Cypraea* (Fig. 87)
- ir-i-des'cent (Gr iris = a rainbow): exhibiting rainbow colors due to the interference of light when reflected from thin films or fine striations, as those seen in mother-of-pearl; prismatic colors reflected (e.g., *Haliotis*)
- ir'ro-rate (L in = upon; ros = dew): covered with minute color marks or very minute grains or specks of color
- I-so-dont'a (Gr iso = equal; dont = tooth): equally developed teeth, each valve with two main teeth slightly curved and fitting into corresponding sockets; an order of bivalves
- i'so-stroph'ic (Gr isos = equal; strophe = turn): a symmetrically sided shell coiled in one plane, a flat spiral, planispiral (e.g., *Bel-lerophonidae*)



## J

- joint (L junctus = join): an articulation or place of natural or easy separation
- ju'gal sinus (L jugum = a yoke): sometimes called a sutural sinus, the depression between the sutural laminae; jugal tract: the surface of the tegmentum adjacent to the jugum; jugum: a longitudinal ridge, sharp or rounded, on some intermediate chiton valves (Fig. 88)
- junc'tion (L jungere = to join): the circular line where one turn of the spire meets another; juncture: the meeting of the whorls of the spire, the suture, an articulation, a seam
- Ju-ras'sic Period (named from Jura mountains, a range near France in Switzerland): middle period of Mesozoic Era; fossils are abundant, varied, and well preserved
- ju've-nile (L juvenis = young): an immature shell

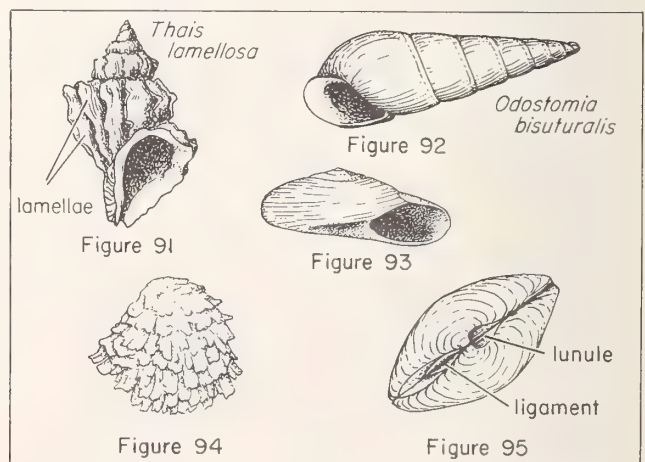
## K

- keel (Ice. kjoir = a keel of a ship): the longitudinal ridge; a carina, a prominent spiral ridge usually marking a change of slope in the outline of the shell (Fig. 89)
- kitch'en-mid-den (Danish kjokkenmodding = kitchen leavings, a shell mound): a mound composed of sea shells and bones, the kitchen refuse of ancient dwellings along the coast of northern Europe, eastern and western United States, and many parts of the world

## L

- la'bi-al (L labium = the lip): pertaining to the lip of the shell; labial area: a flattened surface extending from the inner lip; labiate: having lips or lip-like parts, lipped
- la'bi-um (L labium = the lip): the inner lip of a univalve shell, the inner side of the aperture or columellar lip extending from the origin at the lip of the labrum and resting on the columella (Fig. 90)
- la'brum (L labrum = a lip): the outer lip of a univalve shell, the right side of the aperture is formed by the outer lip; labral: pertaining to the labrum (Fig. 90)
- lac'er-a-ted (L laceratus = mangled): cut, ragged, torn, or with edges jagged or irregular
- la-cin'i-at-ed (L lacina = a flap): slashed or cut irregularly into narrow lobes or segments; bordered with fringe; jagged

- lac-tes'cent (L lac = milk): something like milk in appearance or consistency; yielding or secreting a milky fluid; lacteous: milky, of white or milky color
- lac'u-nose (L lacuna = a hollow, cavity): marked by shallow depressions; having the surface covered with small cavities, pitted; lacunate: with a small gap or pit
- la-gen'i-form (L lagena = a flask; forma = form): flask-shaped, dilated and ending in a narrow neck, like a bottle
- lam-ba'ta (L lambo = to lick): licked, smoothened
- la-mel'la (L lamella = a thin plate): a thin plate, flared axial projections of the outer lip occurring at various stages in the shell growth; lamellae: thin plates of hard or soft tissue; lamellated: covered with scales, divided into thin plates; lamelli-form: having the form of scales or thin plates; lamello-fibrous: refers to shell when one part is composed of fibers and the other of laminae; lamellose: composed of or full of thin plates, scales, or lamellae (Fig. 91)
- La-mel-li-bran'chi-a (L lamelli = thin plate; branchiae = gills): an alternate name for pelecypods
- lam'i-na (L lamina = a thin plate, a layer): a thin plate or scale; laminae: thin layers of solid material, as bone or enamel; laminated: consisting of overlapping plates or scales
- lam-i-nar'i-an zone: that zone of the sea, from 10 to 100 feet in depth, in which the laminarias (dark-spored seaweeds) are found
- lan'ce-o-late (L lancea = a light spear): shaped like a lance, gradually tapering to a point (Fig. 92)
- lap'i-drous (L lapis = a stone): of the nature of a stone
- lap'pet (AS laeppa = a flap): a fold, a small flap, lobe, or loose hanging portion
- last whorl: the last, and usually the largest, complete volution of a spiral shell; a term preferred to body whorl
- lat'er-al (L latus = the side): pertaining to the side; the teeth on either side of the cardinals; lateral area: a diagonally sculptured, triangular shape situated at the sides toward the anterior of the intermediate valves of some chitons, and set off by a diagonal ridge from the central area; lateral teeth: interlocking teeth of a pelecypod, not functioning as a hinge but serving to prevent valves from sliding upon each other when closed
- lat-er-o-fron'tal (L latus = side; frons = brow): situated on the side in front
- lat-i-cos'tate (L latus = wide, broad; costatus = ribbed): having broad ribs; latus: a side
- lat'ticed (Gr latte = lath): cancellated, crossed; to cross or interlace
- lec'to-type (L lectus = chosen + type): a specimen selected from a syntypic series, upon which a revised species is based
- left valve (AS left = weak): determined by pointing the beaks of a pelecypod away from you with the hinge up and the pallial sinus toward the observer, then the left valve is on the left
- length (AS lang = long): in gastropods, the distance from the apex to the anterior end of the shell, same as height; in pelecypods, the greatest horizontal dimension at right angles to the height; in chitons, the greatest dimension parallel to the axis
- len-tic'u-lar (L lenticularis = a lentil): having the shape of a double convex lens, after the fashion of a lens with curved sides; lens-shaped (Fig. 93)
- lep'rous (L lepra = peel): with loose irregular scales; scale-like, covered with scales (Fig. 94)
- lig'a-ment (L ligula = a tongue): a horny band located above the hinge, generally posterior to the beaks; usually the greater part of the ligament is externally placed but may be entirely or partially internal in some genera (Fig. 95)
- lig'u-late (L ligula = a tongue): thin, slender, like a tongue or strap
- li-mac'i-form (L limax = a slug; forma = form): having the form of a limax or slug
- lim'pet (L lambo = lick; petra = rock): a gastropod with an open conical shell, adheres to rocks (e.g., Acmaeidae; Patellidae; an edible Hawaiian limpet called "opihii")





lin'e-ar (L linea = a line): marked with lines; very narrow and elongate; lineated: marked longitudinally with depressed parallel lines; lineolated: marked with minute lines

lingual ribbon (L lingua = tongue): the radula or odontophore; linguiform: tongue-shaped

lip (AS lippa = lip): the outer or inner edges of the aperture in gastropods; any structure that bounds an orifice, margin, edge

lipo- (Gr leipo = lacking): a prefix, a combining form, to signify lacking (e. g., Lipodontida, a suborder of bivalves lacking teeth, as Solemyacidae)

li'rate (L liratus = to plow): fine raised lines or fine grooves on the shell surface, ornamented with sharp, raised threads, marked with parallel grooves or ridges; thread-like sculpture; lira; plural: lirae

lith-o-des'ma (Gr lithos = stone; desma = bond): a calcareous reinforcement of the internal ligament (Fig. 96)

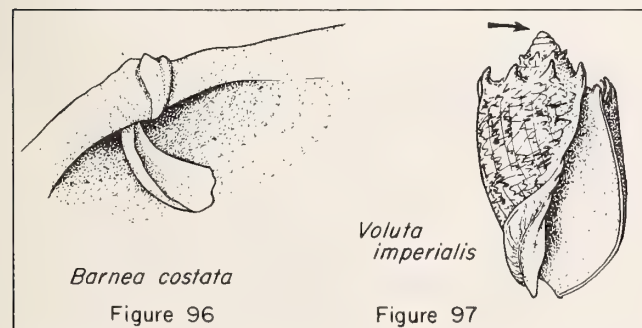
li-thoph'a-gous (Gr lithos = stone; phagein = to eat): perforating stones; Lithophaga: the elongate, cylindrical bivalve which bores into soft rocks, coral blocks, or other shells

lit'to-ral (L litoralis = seashore, coast): the seashore between high and low tide lines; littoral zone, tidal zone

li-tu'ra (L litura = a smearing, a blot): an obscure color spot, paler at one margin as if daubed or blotted

liv'id (L lividus = to be black and blue): pale purplish-brown, lead-colored, ashy-pale

lo'bate (Gr lobos = lobe): provided with lobes, lobed, a lobate process; lobulate: divided into small lobes or having lobes or lobelets



lo'co-type (L locus = place + type): a shell obtained from the same locality of the holotype; same as topotype

lon-gi-tu'di-nal (L longus = long): the length of a shell or direction of the longest diameter, the longitudinal ribs, as on Dentalium

lor'i-cate (L lorica = a coat of mail): to cover with a protective coating or crust

loz'enge (OFr lozenge = a square window pane): a figure with four equal sides having two acute and two obtuse angles; lozenge-shaped, a rhomb, diamond-shaped, similar to the color spots on Conus ebraeus Linnaeus

lu'cid (L lucidus = clear, bright, shining): free from opaqueness, clear, translucent, pellucid, shining

lu'men (L lumen = light): passageway or opening; cavity of a tubular organ

lu'nate (L luna = the moon): semicircular, falcate, crescent-shaped, as the aperture in some shells; lunular: shaped like a small crescent; lunulate: moon-shaped, resembling a small crescent

lu'nule (L lunula = crescent-shaped): the heart-shaped impression in front of the beaks in a bivalve, one half being on each valve; a crescent-shaped part or marking (e. g., as in Pitar fulminata Menke) (see Fig. 95)

lu'rid (L luridus = pale yellow, ghastly): a dirty yellowish color, dismal, dingy, dirty brown color

lu'te-ous (L luteus = golden yellow): yellow, especially an orange or reddish yellow; luteofulvous: tawny yellow

lu'tose (L lutum = to daub with mud): covered with clay, muddy; luteous: muddy

ly'rate (L lyra = a lyre): shaped like a lyre, spatulate and oblong with small lobes toward the base

## M

mac-ro-scop'ic (Gr makros = long, large; skopeo = view): megascopic, visible to the naked eye; opposed to microscopic

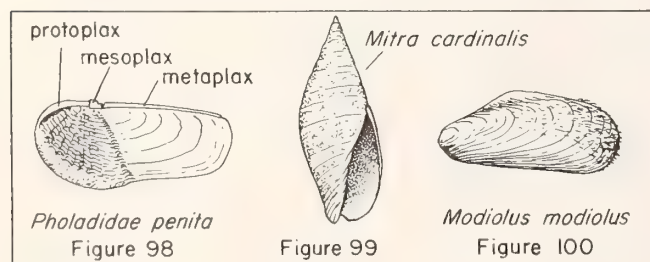
mac'u-la (L macula = spot, a stain): a colored spot of rather large size; maculated: splashed or spotted, blotched; maculose: covered with spots (e. g., Terebra maculata Linnaeus)

mal-a-col'o-gy (Gr malos = soft-bodied; logia = to speak): the study of molluscous or soft animals; the branch of zoology which deals with mollusks, the animal within the shell

mal'le-a-ted (L malleus = a hammer): appearing as though hammered; malleations: a hammered appearance

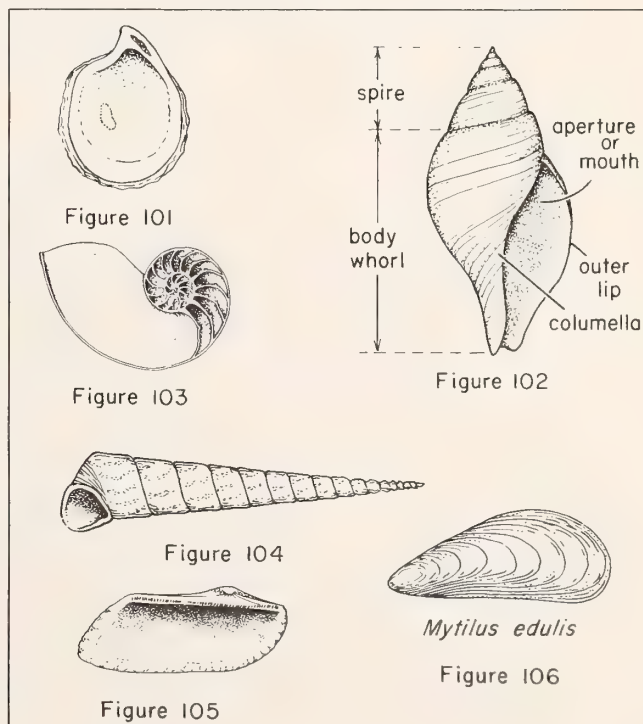
mam'mil-la-ted (L mamilla = the breast): furnished with rounded protuberances or with wart-like projections; bluntly rounded as the apex of Voluta (Fig. 97)

- man'tle (L mantellum = a cloak, mantle): a fleshy tunic, a membranous covering of a mollusk that secretes the shell from marginal glands and provides the periostracum; pallium
- mar-ga-ri-ta'ceous (Gr margarites = a pearl): glossy white with changeable tints of purple, green, and blue; pearly in texture, resembling mother-of-pearl, nacreous; margari-tiferous: pearl-bearing
- mar'gin (L marginare = to furnish with a border): the edge of a shell, sometimes waved, crenated, or dentated; marginate: a thickened edge or border, especially the outer lip; marginated: having a margin, especially one of a distinct character or appearance; thicker
- mar'gin-als (L margo = border): teeth on either side of the median, central, or rachidian tooth; on the most fully developed radulae of most plant-eating gastropods; also called uncini
- mar'mo-rate (L marmor = marble): marble-like, having color distributed as in marble
- maz-a-rine' blue (named after Cardinal Mazarin): a deep rich blue
- me'di-an (L medius = middle): pertaining to the middle, along the axial plane, passing through or along the middle; median tooth: the central or rachidian tooth, a single tooth in the middle of each row in most radulae
- meg-a-scop'ic (Gr megas = large; skopeo = view): visible to the naked eye; opposed to microscopic
- mel-a'ni-a (Gr melas = black, dark): blackness; melanism: a shell with an abnormal black color, the reverse of albinism; melanistic: black; melanoid: looking black or dark
- mem'bra-nous (L membrana = a thin skin): consisting of membranes; soft and pliable, thin; membranaceous
- men-is-coi'dal (Gr meniskos = a crescent): with one side concave, crescent-shaped
- mes'i-al-ly (Gr mesos = middle): of, relating to, or situated on or toward the meson or medial plane, the vertical plane dividing the animal into right and left halves
- meso- (Gr mesos = middle): a prefix used to signify the middle or dividing line; mesostracum: calcareous shell layer between the tegmentum and articulamentum in the more highly developed chitons
- mes'o-plax (Gr mesos = middle; plax = tablet): a calcareous accessory shelly piece above the umbone of some Pholadacea (Fig. 98)
- Mes-o-zo'ic Era (Gr mesos = middle; zoe = life): major time division from 60 to 185 million years ago; pelecypods and gastropods increasing in importance, sea urchins common, Age of Ammonites, Age of Reptiles; Age of Cycadeoids (see Appendix)
- met-a-mor'pho-sis (Gr metamorphosis = a transformation): a pronounced change in form from one growth stage to another, as the metamorphosis of a soft larval mollusk into one with a shell
- met'a-plax (L meta = behind; plax = tablet): accessory plate behind the umbone of some Pholadacea (Fig. 98)
- mi-cro-pa-le-on-tol'o-gy (Gr mikros = small; palaaios = ancient): the study of microscopic fossils, especially Foraminifera
- mi-cro-scop'ic (Gr mikros = small; skopeo = view): exceedingly minute, visible only under a microscope; opposed to macroscopic; microscopically: with minute inspection, so as to require a microscope
- mil-le-punc'ta-tus (L mille = a thousand; punctum = a prick, a puncture): covered or studded with many dots, points, or minute depressions
- mil'li-me-ter (L mille = a thousand; Fr mètre = meter): one-thousandth of a meter, 0.03937 of an inch; 25.4 millimeters (abbreviated mm) are equal to one inch
- min-i-a'ceous (L minium = red lead): of the color of minium or red lead
- Mi'o-cene Epoch (Gr meion = less; kainos = recent): earliest division of Neogene Period; contains fewer fossils of recent species
- Mississippian Period (named from the abundantly fossiliferous strata in central Mississippi Valley): name used in North America and on some other continents; fossils are identical with fossils found in Late Carboniferous rocks of Europe and Asia
- mi'tra (Gr mitra = a turban): Mitra, a genus of marine gastropods whose outline suggests a bishop's miter, a pointed headdress worn by various church dignitaries (Fig. 99)
- mo-di'o-li-form (L modiolus = a small measure or drinking vessel; forma = form): the form of a Modiolus or horse mussel (Fig. 100)





- mol-lus'ca** (L molluscus = meaning soft): invertebrates with a soft unsegmented body and covered usually with a double or single shell, or having an internal shell; the phylum Mollusca is divided into five classes: Amphineura (chitons), Gastropoda (univalves), Scaphopoda (tusk shells), Pelecypoda (bivalves), Cephalopoda (squids, etc.)
- mo-nil'i-form** (L monile = necklace; forma = form): contracted or jointed at regular intervals, resembling a string of beads; refers to some antennae
- mo-noe'cious** (Gr mono = one; oikos = house): having the sexes united in the same individual; opposed to dioecious
- mon'o-graph** (Gr mono = one; graphe = a writing): an account or description of one thing or class of things; a treatise discussing a single subject in detail
- mon-o-my-a'ri-a** (Gr mono = one; mys = muscle): only one muscle scar present, as in oysters and pectens (Fig. 101)
- mon'o-type** (Gr mono = one + type): the original shell of a species described from a single specimen
- monotypic** (Gr mono = one; typos = type): one type, a single representative, as a monotypic genus
- mor-pho-log'ic-al** (Gr morphe = form; logike = speak): the structure or form; the morphological features of a spiral shell are: aperture, body whorl, columella, outer lip, and spire (Fig. 102)
- mot'tled** (OFr mattele = curdled): spotted with different colors; blotched; maculated
- mouth** (AS muth = mouth): aperture of a univalve shell (see Fig. 102)
- mu'cro** (L mucro = a sharp point): ending in a sharp, rigid point, a small pointed process or part; mucronate: terminating abruptly in a short sharp point or spine
- mul-ti-loc'u-lar** (L multus = many; locus = little place): many celled or chambered, having several divisions or compartments (Fig. 103)
- mul-ti-se'ri-al** (L multus = many; series = a row): having many series or rows, as teeth on the radula
- mul-ti-spi'ral** (L multus = many; spira = a coil): consisting of many whorls, as the opercula of Trochidae, Livona, or Turritella (Fig. 104)
- mul-ti-stri'ate** (L multus = many; stria = furrow, channel): with many striations, numerous thread-like lines, grooves, or scratches
- mul-ti-vin'cu-lar** (L multus = many; vincio = bind): many bonds of union, as in Arca (Fig. 105)
- mu-ri-cate** (L murex = a pointed stone): formed with sharp elevated points; having the surface covered with sharp points; muricoid: similar to the Muricidae
- mus'cle** (L musculus = muscle): that part of a mollusk's anatomy by which the animal is attached to its shell; muscle scar: a spot or depression, circular or ovate in outline, on the inside of a bivalve shell showing where the adductors were attached; anterior and posterior muscle scars, as in Venus
- mus'sel** (L musculus = a sea mussel): a bivalve, as Mytilus; boring mussel: Lithophaga; horse mussel: VolSELLa; freshwater mussel: Unionidae
- mu-ta'tion** (L mutare = to change): the act or process of change, variations in form, alterations
- my'o-phore** (Gr myos = a muscle; phoros = to bear): a spoon-shaped or sickle-shaped structure beneath the beaks on the interior of the shell, serving as a place of attachment for certain muscles; same as apophysis which is a shelly process for the support of a muscle (e.g., in Pholadidae)
- my-til'i-form** (L mytilus = a sea mussel; forma = form): having the form of a mussel shell, mytiloid (Fig. 106)



## N

na'cre (Fr nacre = mother-of-pearl): the pearly or iridescent substance which lines the interior of some shells; iridescent luster, as mother-of-pearl; nacreous, as oyster shells

na'ked (AS naced = nude): lacking the usual covering; not having an external calcareous shell

na'tant (L natare = to swim): floating, swimming at the surface of the water

nat'i-cid (LL naticae = buttocks): pertaining to Natica, a genus of carnivorous sea snails

nau'ti-loid (L nautilus = a nautilus; Gr eidos = form): resembling the nautilus in shape; any nautiloid cephalopod shell coiled in a symmetrical involute spiral, as in the genus Nautilus; nautilicone: spirally coiled in a single plane

na-vic'u-lar (L dim. of navis = ship): boat-shaped, cymbiform, scaphoid

neb'u-lous (L nebula = mist, vapor, cloud): clouded, marked with many scattered, abrupt, dilated colors or spots; misty, indistinct

Neogene Period (Gr neos = new; genes = born): latest period of Cenozoic Era, includes Pleistocene, Pliocene, and Miocene Series and Epochs; appearance of modern mammals and more highly ornamented gastropods

ne'o-type (Gr neos = new, recent + type): a type of a species collected later, or selected to replace the original type if lost or destroyed

ne-phrid'i-um (Gr nephros = a kidney): one of the tubular renal organs of a mollusk

nep-i-on'ic (Gr nepios = infant): the next developmental stage immediately succeeding the embryonic stage

ne-rit'ic (L nerita = sea mussel): pelagic, found near land on the surface of the water, as neritic plankton

nes'tlers (AS nestlian = to build a nest): clams nestling in cavities or seeking protection in clay or among dead shells which sometimes produces variations in the shapes of their shells (e. g., Sphenia, Petricolidae)

niche (It. nicchio = a shellfish, a mussel): a position or occupation filled by an animal in the food-web of a community

ni'dus (L nidus = a nest): a place for the natural deposit of eggs, hatching place; nidamental: of, pertaining to, bearing, or containing eggs or egg capsules (e. g., Lima)

ni'ger (L niger = black, dark, dusky): glossy black; nigerrima: very black

ni-gres'cent (L nigrescens = to grow black): approaching blackness, blackish, changing to a black color

nit'id (L nitidus = shining): glossy, shining, brilliant, lustrous; nitidus: having a shining surface

niv'e-ous (L niveus = snow): snowy, resembling snow

noc-tur'nal (L nocturnus = of the night): occurring or performed at night, seeking food at night; opposed to diurnal

node (L nodus = a knot, knob): a knob or swelling; nodiferous: having or bearing nodes; nodose: having tubercles, knobs, knobbed ribs; nodular: in the form of small knobs or nodules, small knob-like projections; nodulose: having nodes of small size

notch (ME nock = a notch): a break or irregularity in the peristome, marking the position of the siphon; notched: nicked or indented, as the anterior canal of some gastropods; "turrid notch" on the upper portion of the outer lip in Turridae (Fig. 107)



Figure 107

nu'cle-us (L nucleus = a little nut, kernel): the tip or earliest formed part of a shell, formed when the egg is hatched, the embryonic shell which remains and is transformed into the apex of the adult gastropod shell, protoconch; nuclear whorls: those which emerge from the egg; nucleated: having a nucleus; nuclei: plural of nucleus; protoconch is the embryonic shell of a bivalve

nu'tant (L nutare = to nod): nodding, drooping, the tip bent down toward the horizon

nym'pha (L nympa = a nymph): an impressed area behind the beak of a bivalve strengthening the margin where the ligament is attached or to reinforce the normal hinge structure



## O

ob-con'ic (L ob = inversion, turn about; conic = cone): in the form of a reversed cone, inversely conical (Fig. 108)

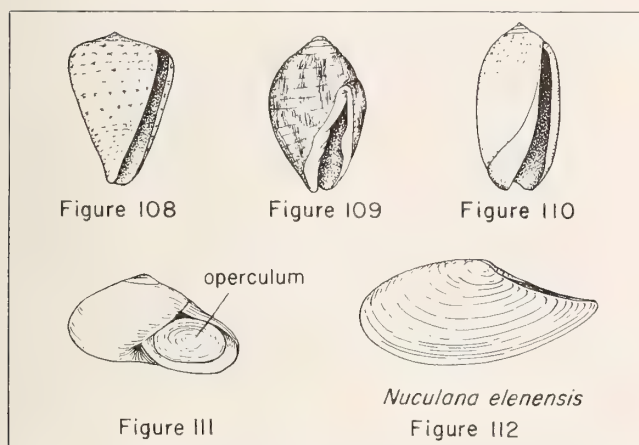
o-bese' (L obesus = fat): distended, enlarged, corpulent

ob-late' (L oblatus = spread out): flattened, applied to a spheroid of which the diameter is shortened at two opposite ends; flattened at the poles

ob-lique' (L ob = before; liquis = awry): to deviate from the perpendicular; slanting, as the aperture of some shells; obliquely ovate: as *Crenella columbiana* Dall

ob'long (L oblongus = rather long): elongated, much longer than broad; elliptical

ob-o'vate (L ob = inversion, turn about; ovate = egg-shaped): reversed ovate, as some shells when the diameter is greater near the apex than at the lower part; greatest width above the aperture (Fig. 109)



ob'so-lete (L obsoletus = to go out of use): obscure; not very distinct; atrophied, rudimentary, imperfectly developed; when the suture is not obvious

ob-tuse' (L obtusus = blunted): blunt or rounded at the extremity, not pointed

oc-clu'sor (L ob = before; claudo = close): that which occludes; an organ or muscle that closes an opening in a body, as the anterior retractor muscles of brachiopods; occluded: closed

oc'el-late (L oculus = eye): eye-like, spotted, having ocelli or eye-like spots; ocelli: minute simple eyes

o-chra'ceous (Gr ochra = yellow ocher): pale yellow, resembling ocher, brownish yellow

oc'u-lus (L oculus = eye): a spot shaped like an eye; oculi: plural of oculus; oculiferous: bearing eyes

oc-tag'o-nal (Gr okto = eight; gonia = angle): having eight angles or sides

o-don'to-phore (Gr odous = a tooth; pherein = to bear): a name given by Professor Huxley to the radula, tongue, or lingual ribbon in classes of gastropods possessing a complicated series of lingual teeth; a bulging, tonguelike structure, more or less protrusile, supporting the radula in most gastropods; also called buccal mass

Ol'i-go-cene Epoch (Gr oligos = few; kainos = recent): latest division of Paleogene Period

oligogyral (Gr oligos = few, small; gyros = circle): having few spirals, paucispiral

ol-i-va'ceous (L oliva = olive): resembling the olive, olive-colored, dark greenish, as *Nucula linki* Dall; oliviform: oval, resembling an olive in form (e. g., Olividae) (Fig. 110)

om-niv'o-rous (L omnis = all; vorare = to devour): eating both animal and vegetable food; living on food of all kinds indiscriminately

om'pha-lous (Gr omphalos = the navel): a shell with an umbilicus

on-tog'e-ny (Gr on [ont] = being; genesis = generation): the history of the evolution of an individual organism; distinguished from phylogeny

o'pal-ine (L opalus = opal): opalescent; bluish or milky white with iridescent luster

o-paque' (Fr opacus = shady): impervious to light, not transparent or translucent

o-per'cu-lum (L operire = to close or shut): a horny or shelly plate serving to close the aperture, wholly or partly, when the animal is retracted; a chitinous or calcareous plate present in many groups of mollusks (e. g., *Turbo*, *Natica*, *Fusinus*, *Astraea*, etc.); operculate: having an operculum; operculigenous: producing an operculum; operculigerous: having an operculum (Fig. 111)

opisthoclinal (Gr opisthen = behind; clino = lean): usually refers to growth lines which lean backward with respect to growth direction of the helicocone

opisthocyrt (Gr opisthen = behind; kyrtos = curved): referring to the growth lines that arch backward with respect to the growth direction of the helicocone

o-pis-tho-gy'rate (Gr opisthen = behind; gyrate = revolve): the beaks in a bivalve pointing backward (e. g., in *Nuculidae*) (Fig. 112)

or-bic'u-lar (L orbis = circle, spherical): round and flat, circular, well rounded, having the

form of an orbit (e. g., *Codakia orbicularis* Linnaeus, or *Divaricella*); orbiculate: taking the form of an orbit

Or-do-vi'cian Period (Ordovices, an ancient Celtic tribe in western England and Wales): early period in Paleozoic Era; Middle Ordovician beds contain the oldest known pelecypods, more variety of marine fossils found than in the Cambrian rocks

or'i-fice (L os = mouth; facere = to make): a small opening into a cavity, a mouth-like opening

orthocline (Gr orthos = direct; clino = lean): referring to growth lines which are at right angles to growth direction of the helicocone

or-tho-gy'rate (Gr orthos = direct; gyrate = revolve): the bivalve beaks directed toward each other (e. g., *Cardium*) (Fig. 113)

orthostrophic (Gr orthos = direct; strophe = turn): a normally coiled shell, not hyperstrophic

os-phra'di-um (Gr osphradion = strong scent): an olfactory organ of some mollusks, a collection of elongated sense-cells over each gill

os'si-cle (L os = bone): a little bone, a small calcareous deposit; hard nodular structure; a chitinous process; osseous: having a bony skeleton or pertaining to the nature of bone

o'to-cyst (Gr otos = ear; kystis = bladder): an auditory vesicle or organ of hearing

outer lip: the outer edge of the aperture from the suture to the foot of the columella, labrum (see Fig. 90)

o'vate (L ovatus = an egg): egg-shaped; oval, as *Cypraea*; ovate-oblong: between oval and oblong, having a shape somewhat resembling a longitudinal section of a hen's egg; ovate-subquadrate: rounded and somewhat four-sided (e. g., *Panope globosa* Dall); ovately-conic: shaped like an egg but with a somewhat conic apex (Fig. 114) ovoid: egg-shaped (e. g., *Marginella*)

o-vip'a-rous (L ovum = an egg; pario = produce):

producing eggs or ova which hatch some time after leaving the body of the female (e. g., Cephalopods, *Busycon*)

o-vo-vi-vip'a-rous (L ovum = egg; vivus = alive; pario = bear): producing eggs that are incubated within the female's body and from which the young emerge just before, during, or immediately after the eggs are deposited

## P

pachy- (Gr pachys = thick): a prefix, a combining form to signify thick (e. g., *Pachydon-tida*, an order of bivalves with thick teeth, as *Chamidae*)

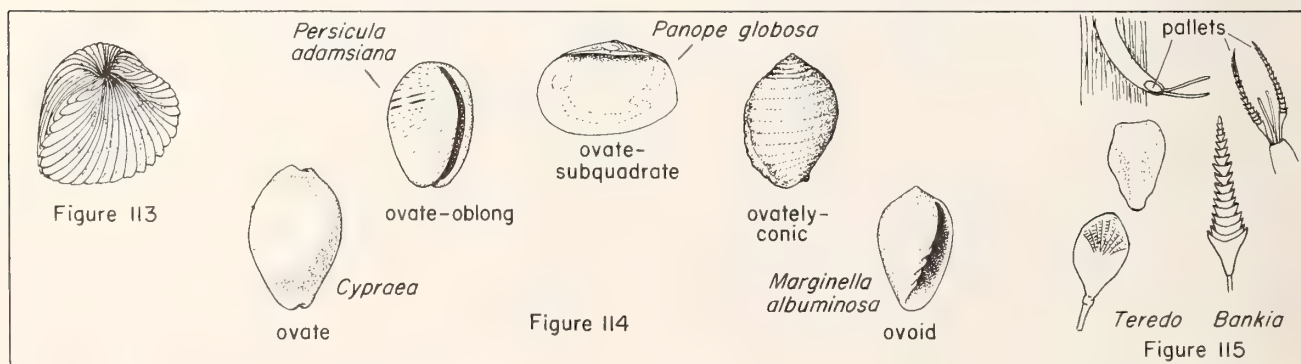
Pa'le-o-cene Epoch (Gr palaios = ancient; kainos = recent): oldest division of Paleogene Period

Paleogene Period (Gr palaios = ancient; genes = born): includes Oligocene, Eocene, and Paleocene Series and Epochs; types of gastropods and pelecypods well represented, period of archaic mammals

pa-le-on-tol'o-gist (Gr palaeo = ancient; ontos = being; logos = speech): a student of fossil remains of organisms and mollusca, such as Ammonites, that lived during ancient geological eras; paleartic: of or pertaining to the northern part of the old world; paleotropical: of or pertaining to the tropical or subtropical regions of the old world

Pa-le-o-zo'ic Era (Gr palaios = ancient; zoe = life): major division of geologic time; characterized by an abundance of ancient organic remains, Age of Invertebrates (see Appendix)

pal'let (L palo = spade): one of the two lance-shaped or spatulate-shaped plates forming part of the boring apparatus; pallets: two simple or compound calcareous structures at the siphonal end of some woodboring mollusks, closing the burrow when the siphons are withdrawn (paddle-shape in *Teredo*; cone-in-cone-shape in *Bankia*) (Fig. 115)





pal'li-al line (L pallium = a cloak): a fine, single-lined impression in a bivalve produced by the edge of the mantle; pallial sinus: a notch or recess in the pallial line; pallium: the mantle of a bivalve mollusk (Fig. 116)

pal'lid (L pallidus = pale): pale, ashen, lacking or deficient in color; general color paler

pal'mate (L palma = hand): hand-shaped, digitate, parts arising from a common center, flat and wide and having projections like fingers, as certain corals

pan-du'ri-form (L pandura = a bandore, musical instrument): fiddle-shaped, oblong at the two extremities and contracted in the middle; pandurate

pap'il-lar-y (L papilla = a nipple, pimple): small nipple-like processes, as the papillae of the tongue, minute nodes or bumps; papilliform: shaped like a papilla; papillose: covered with an abundance of little bulgings or pimples; verrucose

pap'u-lous (L papula = pimple): covered with small bumps or pimples, as the operculum of Nerita versicolor Gmelin; papula: an isolated pimple or small bump

pap-y-ra'ceous (L papyrus = a writing paper of ancient Egyptians): thin, paper-like, papery, parchmentous

par-a-sig-moi'dal (Gr para = beside; sigma = the letter  $\Sigma$ ; eidos = form): curved like a reversed letter "S"

par-a-sit'ic-al (Gr para = beside; sitos = food): living in or on another species and deriving nourishment for the whole or part of its existence (e.g., Odostomia on oysters, limpets, or scallops)

par'a-type (Gr para = beside + type): a specimen collected at the same place and at the same time as the holotype and used in the description of a species

pa-ri'e-tal (L paries = a wall): inside wall of a univalve within the aperture, the broader upper portion of the inner lip; parietal cal-lus: a thickening of the inner lip; parietal fold: spiral ridge on the parietal region; parietal lip: part of the inner lip; parietal ridge: a prominence on the parietal lip; parietal wall: a discontinued, redundant expression meaning, pertaining to a "wall wall"; parietes: pertaining to the walls of a part or cavity

par-i-vin'cu-lar (L pari = equal; vinculum = to bind): a ligament similar to a cylinder split on one side, attached by several edges, one to each valve (e.g., Tellina, Cardium)

par-vi-co-no-id (L parvus = small; conoid = cone-shaped): like a small cone

pa-tel'la (L patina = small pan, knee cap, knee pan): saucer-shaped, typical of limpets (e.g., Patellidae); patellate: saucer- or limpet-shaped; patelliform: having the form of a patella or knee pan or a flattened cone

pat-ro-ny-m'ic (Gr pater = father; onyma = name): the name of the species is derived from the name of a person (e.g., Sowerby's Tusk, Dentalium sowerbyi Guilding)

pat'u-lous (L patulus = lie open): having a wide aperture, expanded, distended (e.g., Pur-pura) (Fig. 117)

pau-ci-spi-ral (L paucus = few, little; spira = coil): only slightly spiral, as some of the opercula (e.g., in Nerita, Littorina, and the undersurface of the Turbo operculum)

pec'tin-ate (L pecten = a comb, a scallop): comb-like (e.g., Pecten, a pectinoid bivalve with radiating ribs); pectunculate: having a row of minute appendages; pectunculoid; pectinations: small sharp teeth on outer edges of the insertion plates in chitons

ped'al (L pedalis = foot): pertaining to a footlike appendage, as of a gastropod

ped'i-cle (L pediculus = a little foot): a short stalk, peduncle; raised on pedicles, as goose barnacles (Fig. 118)

pe-dun'cle (LL pedunculus = foot): a slender stalk, a stem by which some shells are attached to an object, a wick-like means of attachment of lamp shells; peduncular muscles: as in Hemithyris psittacea Gmelin; pedunculate: supported on a stem or stalk, as the eyes of some land snails (Fig. 119)

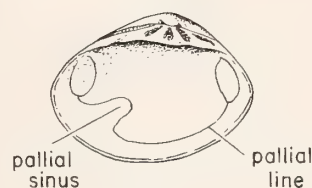


Figure 116



Figure 117

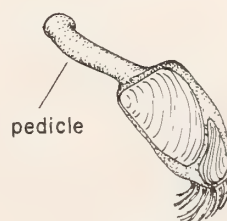


Figure 118

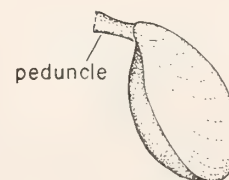


Figure 119

pe-lag'ic (Gr pelagos = the open sea): pertaining to or inhabiting the open sea far from land; animals living at the surface of the water in midocean (e.g., Janthina, Pteropoda, Heteropoda); there are pelagic larval stages of many Cypraeidae and some Natica, Murex, and Nerita

pel-e-cyp'oda (Gr pelekys = ax; pous = foot): bivalves, shell in two pieces, hinged along one edge, living in the sea and freshwater only (e.g., cockles, mussels, oysters, clams); a division of the phylum Mollusca

pel'li-cle (L pellis = skin): skin or film, a thin skin or layer, as the nacreous pellicle of some shells

pel-lu'cid (L per = through; luceo = shine): transparent or clear, translucent, not opaque; often occurs in deep water shells

pel'tate (L peltatus = armed with a shield): shield-shaped, scutiform

pen (L penna = feather): an internal shell present in most squids, may be slender, very thin, delicate, horny, or lanceolate; cuttlefish bone: the internal, oblong, calcareous shell of Sepia; cuttlebone: used for canary birds as a source of lime

pen'du-lous (L pendere = to hang down): hanging down, to swing by an attached end or part, pendent, swaying

pen-i-cil'li-form (L penicillus = pencil or small brush; forma = form): pencil-shaped; tipped with fine hairs, a bundle of short, close fibers

pen-na'ceous (L penna = a feather): feathered; resembling a feather, as a marking

Pennsylvanian Period (named from the leading coal-producing state): time of coal-making corresponding to the Upper Carboniferous Period on other continents

pen-tag'o-nal (Gr pente = five; gonia = angle): five-sided, having five angles; pentamorous: composed of five similar parts, as a starfish

pen-nult (L pene = almost; ultima = last): the next to the last; penultimate whorl: the last but one in a series, the last whorl before the body whorl (Fig. 120)

per'fo-ra-ted (L perforare = through; forare = to bore): a small opening having the appearance of being bored (e.g., Fissurella, Haliotis)

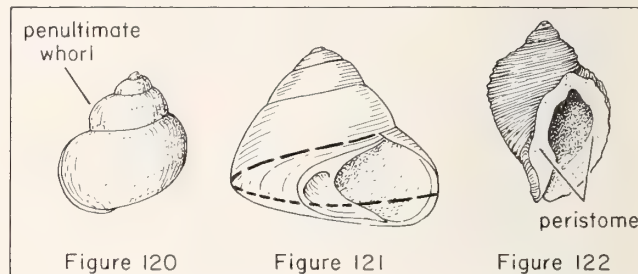
per-ga-me'ne-ous (Pergamon, an ancient city in Asia Minor which gave its name to parchment): thin, tough, a semi-transparent substance; having the quality or appearance of parchment

perinductura (Gr peri = around; inductura = a coating, a covering): in some gastropods the edge of the mantle secretes an outer shell layer which is reflected back over the outer lip

per-i-os'tra-cum (Gr peri = around; ostrakon = shell): a skin or horny covering on the exterior of many shells, a protection against erosion; sometimes thin and transparent (e.g., Lunatia), like shellac, or thick, fibrous, or hairy (e.g., Arca)

pe-riph'er-y (Gr peri = around; phero = bear): the greatest circumference of a spiral shell (Fig. 121)

per'i-stome (Gr peri = around; stoma = mouth): the thickened rim or lip around the mouth; the lip or margin of the aperture of a spiral shell (Fig. 122)



per'i-treme (Gr peri = around; trema = hole): the peristome of a univalve; the apertural margin, continuous without interruption by the body whorl

per'i-win-kle (AS pinewincklan = sea snails; or from petty winkle = the small one): a worldwide gastropod genus living between the tide marks (the littoral zone), family Littorinidae; the common European edible species is Littorina littorea Linnaeus

Per'mi-an Period (from Perm, a former province of northeastern Russia): during this latest period of the Paleozoic Era, India, Australia, central South America, and South Africa were covered with ice

per'vi-ous (L per = through; via = way): perforate or open; very narrowly open, as the umbilicus in some gastropods

pet'al-oid (Gr petalon = leaf): resembling petals, consisting of petals

pe-tric'o-lous (L petra = rock; colo = inhabit): dwelling within stones, crevices, or in hard clay, as some bivalves (e.g., Petricolidae)

phaner'omphalous (Gr phaneros = visible; omphalos = the navel): a shell with a completely visible umbilicus

Phanerozoic Eon (Gr phaneros = visible; zoe = life): division of geologic time, from the



present to 520 million years ago (see Appendix)

phrag'mo-cone (Gr phragmos = fence, an enclosure; konos = cone): an internal chambered shell of certain cephalopods (e.g., Spirula); a thin, conical, chambered internal shell of belemnoids, a Mesozoic family

phy-log'e-ny (Gr phylon = a tribe; genesis = origin): the history of the ancestral development of a species, tribal history; distinguished from ontogeny; phylogenetic

phy'lum (Gr phylon = a tribe): a chief or primary division of the animal or plant kingdom, a series of genetically related animals or plants (e.g., phylum Mollusca)

phy-toph'a-gous (Gr phyton = a plant; phagein = eat): feeding on plants, herbivorous (e.g., Haliotis, Acmaea)

phytoplankton (Gr phyton = a plant; planktos = wandering): minute pelagic plant life

pic'e-ous (L piceus = pitchy): black, pitchy, pitch-black, brownish or reddish black

pid'dock: an edible boring mollusk of the Pholadidae family, as Barnea, Pholas, Pholadidea

pil'lar (L pila = column): resembling a column in form or use, extending from the apex to the base around which the whorls are built; columella; pillar cavity: the umbilicus (Fig. 123)

pi'lose (L pilus = hair): covered with hairs, especially with fine and soft hair; hairy

pin'nate (L pinnatus = feathered): shaped like a feather, having lateral processes (e.g., Murex pinnatus Wood) (Fig. 124)

pi'si-form (L pisum = a pea; forma = form): shape of a small globular body; pea-shaped

pla'ga (L plaga = a blow or stripe): a long, large spot, a stripe or streak of color

plait (L plico = to fold): applied to folds on the columella or pillar of gastropods; plication (e.g., Mitra, Cancellaria, Voluta) (Fig. 125)

pla-ni-spi'ral (L planus = level; spira = coil): shells coiled in one plane like a flat spiral

with symmetrical sides; sometimes refers to shells whorled in a discoid form with asymmetrical sides; isostrophic

plank'ton (Gr planktos = wandering): pelagic animals collectively, distinguished from coast or bottom forms; a general name for animals or plants living at or near the surface of the water

pla-nor'boid (L planus = flat; orbis = a circle): flat and orb-like; Planorbis: a genus of freshwater shells of a discoidal form, resembling ammonites but not chambered; pelagic heteropods such as Atlanta peroni Lesueur or Oxygyrus keraudreni Lesueur

Pleis'to-cene Epoch (Gr pleistos = most; kainos = recent): latest division of Neogene Period, Glacial Age

pleural areas: side slopes of valves of chitons, not including the jugal tracts

pli'ca (LL plica = to fold): a bend, as a fold of skin; plicated: folded, plaited, or twisted, as on the pillar of Voluta; plication: a small fold or corrugation that affects the whole shell but does not thicken it, a fold on the columella; pliciform: having a plait-like form

Pli'o-cene Epoch (Gr pleion = more; kainos = recent): middle division of Neogene Period; contains many fossil shells of apparently Recent species

plum'be-ous (L plumbum = lead): lead-colored

plu'mose (L pluma = feather): having fine processes on opposite sides

po-lyg'o-nal (Gr polys = many; gonia = angle): many sided, having many angles

pol-y-gy'ral (Gr polys = many; gyros = circle): a shell having many whorls; multispiral is the preferred term

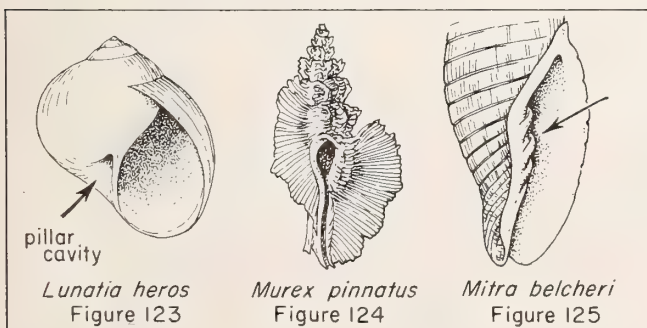
pol-y-mor'phic (Gr polys = many; morphe = form): having many forms or types of structure in the same species; wide variation

po-lyph'a-gous (Gr polys = many; phagein = eat): eating a variety of food, subsisting on various kinds of food; voracious

polytypic (Gr polys = many; typos = type): having many types or forms, as a species with one or more subspecies (e.g., Conus floridanus floridanus Gabb, C. f. floridensis Sowerby, C. f. burryae Clench)

pon'der-ous (L ponderosus = weight): heavy or large, huge, bulky

por'cate (L porca = ridge between two furrows): having longitudinal ridges and furrows, as a surface



*Lunatia heros*  
Figure 123

*Murex pinnatus*  
Figure 124

*Mitra belcheri*  
Figure 125

- por'ce-la-neous (It porcellana = porcelain): resembling porcelain, like an enameled surface, nacreous luster (e.g., Natica)
- po-rose' (LL porosus = full of pores): full of pores, porous, perforate
- por-rect' (L por = forth; rego = stretch): stretched out, elongated forward, to stretch out horizontally
- post-ap'ic-al (L post = after, behind; apex = the tip): lateral teeth situated behind the umbo or apex
- post-ba'sal (L post = after; Gr basis = a pedestal): behind, beyond, or near the base
- pos-ter'i-or (L post = after, behind): situated away from the anterior part of the shell; the small end of dentaliums; posterior notch: an indentation in the outer lip near the suture
- post-nu'cle-ar (L post = after; nucleus = a little nut, kernel): after the nucleus
- pre-da'cious (L praeda = prey): feeding on other mollusks; predatory: carnivorous, living by preying upon other animals
- pre-hen'sile (L prehensus = to seize): adapted for grasping or holding, formed to grasp or coil around and cling to objects
- pre-morse' (L prae = before; modere = to gnaw): terminating abruptly, as if bitten or broken off, with blunt or jagged termination
- pri'mar-y teeth (L primus = first): cardinals or central teeth below the umbones
- Pri-on-o-don'ta (Gr prion = saw; dont = tooth): an order of bivalves with saw teeth, like Arca, not chevron-shaped
- pris-mat'ic (L prisma = something sawed): exhibiting rainbow tints, resembling the colors formed by the refraction of light through a prism; microscopically honeycombed, needle-like prism structure, as in Pinna
- pro-dis'so-conch (L pro = before; dis = two; concha = shell): the rudimentary or embryonic shell of a bivalve mollusk; the prodissoconch of a scaphopod consists of two shelly valves which unite to form a tube; the embryonic shell of a univalve is called the protoconch
- pro-duced' (L pro = before; duco = lead): elongated, extended, drawn out
- pro-fuse' (L pro = forth; fundo = pour): lavishly marked, abundant
- pro-os'tra-cum (Gr pro = before; ostrakon = shell): a horny pen, the anterior prolongation of the rostrum of a cephalopod, as a belemnite
- pro-po'di-um (Gr pro = before; pous = foot): the foremost division of the foot of a gastropod used to push aside sediment as the animal crawls
- pros-o-cline (Gr proso = forward; clino = lean): usually referring to growth lines leaning forward with respect to the growth direction of the helicocone
- pros-o-cyrt (Gr proso = forward; kyrtos = curved): the growth direction of the helicocone curving forward
- pros-o-gy'rate (Gr proso = forward; gyros = a circle): turned forward as beaks which are anteriorly directed (e.g., Tellina lyra Hanley) (Fig. 126)
- pro'to-conch (Gr proto = first; konche = shell): the embryonic shell of a univalve, frequently different in design, texture, or color from the adult shell; the rudimentary or embryonic shell of a bivalve mollusk is called a prodissoconch
- pro'to-plax (Gr proto = before): one of the supplementary plates in front of the umbone in some Pholadacea (see Fig. 98)
- pro-tract' (L pro = forward; traho = draw): to push or extend forward or outward, to draw forward, to protrude; protractor scars: scars are situated anteriorly, made by the muscle
- pro-tru'sile (L pro = forward; trudo = thrust): capable of being thrust out or withdrawn, usually with rapidity of motion, as the radula
- pro-tu'ber-ance (L protuberare = to swell): a knob, a prominence, something swelling beyond the adjacent surface
- pro-vin'cu-lum (L pro = primitive; vincium = to bend): a primitive hinge of some young pelecypods; rudimentary hinge of very small teeth which develop before the permanent teeth are formed
- prox'i-mal (L proximus = nearest): relatively nearer the central portion of the body or point of origin; opposed to distal
- pru'i-nose (L pruina = hoar frost): to appear as if frosted; powdery appearance
- psam'mous (Gr psammos = sand): sandy; composed of any material in the form of rounded grains of sand
- pseu-do car'di-nals (Gr pseudo = false; L cardinalis = pertaining to the hinge): the thick, usually triangular and projecting, processes fitting into one another upon the hinge in bivalves; false teeth
- pseu-do-lat'er-al (Gr pseudo = false; L latus = the side): false lateral teeth
- pseudoselenizone (Gr pseudos = false; selene = the moon; zone = girdle): a band of cres-



centic growth lines on the shell surface resembling a selenizone but not caused by a notch or slit in the aperture

**Pte-no-glos'sa** (Gr ptenos = feathered; glossa = a tongue): a suborder of gastropods with a long row of numerous, graduated, hooked teeth on the radula with the smaller teeth in the center (e.g., Scalidae and Janthiniidae)

**pter'o-pods** (Gr pteron = wing; pous = foot): an order of mollusks, naked or bearing fragile shells, with wing-like expansions of the foot which serve as swimming organs, gregarious, abundant in all seas, affording food for whales; pelagic gastropods, sea-butterflies (e.g., Thecosomata, the ones with shells; Gymnosomata, the ones without shells)

**pu-bes'cent** (L pubescentis = becoming downy): coated with fine wool-like or downy substance

**puce** (Fr puce = flea colored): dark brown or purplish brown

**punc'tate** (L punctum = a point): covered or studded with dots over the surface, dotted, minute color spots; punctum: a spot, pit, or dot

**punc'tured** (L pungere = to pierce): a small hole, a minute or puncture-like depression

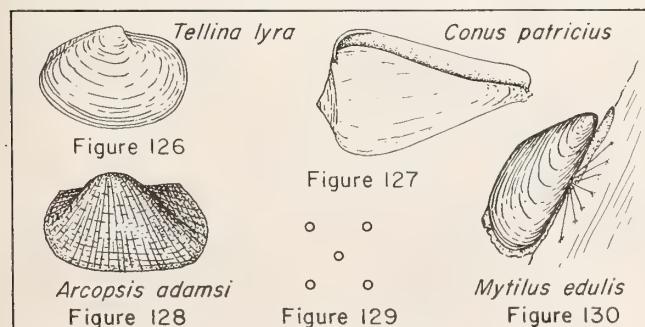
**pu'pi-form** (L pupa = a chrysalis; forma = form): formed like a pupa, cocoon-shaped, a pupi-form shell (e.g., Pupidae)

**pur-pu-ra'ceous** (L purpura = purple): purple in color (e.g., Conus purpurascens Sowerby, the purple cone); purpuroid: like purple

**pus'tu-late** (L pustula = a bubble, a blister): an elevation resembling a pimple or blister, wart-like projections, formed into pustules; pustular: marked with pustules, pustulose (e.g., Jenneria pustulata Solander)

**py-ram'i-dal** (Gr pyramis = a pyramid): having the form of a pyramid, conical

**pyr'i-form** (L pyrum = a pear; forma = form): pear-shaped, round and large at one end, generally tapering to the other (e.g. Conus (Dendroconus) patricius Hinds) (Fig. 127)



## Q

**quad-ran'gu-lar** (L quadrus = a square; angulus = angle): four-cornered, having four prominent angles and four sides

**quad'rate** (L quadratus = square): rectangular shape, squarish, four-sided in general outline (e.g., Arcopsis adamsi E. A. Smith) (Fig. 128)

**quad-ri-den'tate** (L quadri = four; dentatus = tooth): having four teeth or tooth-like processes

**quad'ri-fid** (L quadri = four; findere = to divide): four-cleft, cut into four segments

**quad-ri-lat'er-al** (L quadri = four; latus = side): formed or bounded by four lines; four-sided

**quad'ri-valve** (L quadri = four; valva = leaf of a door): four-valved

**qua'hog** (abbr. Am. Ind. poquauhock): a large common clam (Mercenaria) found on the Atlantic coast and highly esteemed as food; quahaug

**quin'cunx** (L quinque = five; uncia = twelfth): an arrangement of five things in a square, having one in each corner and one in the center; quincuncial (Fig. 129)

## R

**ra-chid'i-an** (Gr rhachis = spine): the median or central tooth on the radula is also called the rachidian tooth; often spelled rhachidian

**Ra-chi-glos'sa** (Gr rhachis = spine; glossa = tongue): a suborder of gastropods (i.e., Muricidae) with three longitudinal series of teeth, having a median tooth with from one to several sharp cusps; the admedians, when present, are usually broad and rakelike with many cusps; frequently spelled Rhachiglossa

**ra'di-al** (L radius = a ray): extending from a center in a manner of rays; radiated: to send out in rays or direct lines from a common point; radiating: ribs or bands of color meeting in a point at the umbones of a bivalve shell and spreading out toward the ventral margin (e.g., the radial ribs on Cardium, Pecten)

**rad'i-cate** (L radicans = rooted): to become permanently established; having a root-like organ used for anchorage or attachment, as a byssiferous bivalve (e.g., Mytilus) (Fig. 130)

rad'u-la (L rado = to scrape, to scratch): a rasp-like organ, odontophore or lingual ribbon armed with toothlike processes, found in nearly all mollusks except clams (Fig. 131)

ra'mose (L ramosus = branched): branching, full of branches, branch-like; ramified

ra'phe (Gr rhaphe = a seam or suture): a furrow or seam, a seam-like appearance

ray (L radius = a beam or ray): one of a number of fine lines radiating from a center

rec'li-vate (L re = back; clivus = slope): having the form of a sigmoid curve; doubly curved like the letter S

rec'on-dite (L reconditus = put away, hidden): remote from ordinary or easy perception, concealed; when one part is covered by another; hidden

rec-ti-lin'e-ar (L rectus = straight; linea = line): straight, formed in straight lines, bounded by straight lines

re-curved' (L re = back; curvus = bent): turned backward, curved or bent back or down, as the anterior short canal of Cassia (Fig. 132)

re-flect'ed (L re = again; flectere = to bend or turn): thrown back, turned from the general course of the structure, curved or folded backward; reflexed: turned back upon itself or in the direction whence it came, bent abruptly back (e.g., the lip of Cassia; the anterior canal of Cerithium (Fig. 133))

re-fract'ed (L re = back; frango = break): to bend from a direct course, turn aside, bent back at an acute angle

ren'i-form (L renes = kidney; forma = form): kidney-shaped, broadly cordate and broader than long

re-pand' (L re = back; pandus = bent): waved, with alternate segments of circles and minute angles, having a wavy or uneven outline; sinuate

re'pent (L repens = to creep): creeping, applied to animals which are attached by the whole length of their shell, giving the appearance of creeping or crawling

re-plic'a-tile (L re = again; plico = fold): capable of being folded back upon itself, as a wing

re-sil'i-um (L resilio = leap or spring back, rebound): a triangular ligament structure, a tough chitinous pad, residing in a chondrophore or pit along the inner hinge margin of a bivalve which causes the shell to spring open when the muscles relax; resilifer (e.g., in Mactra)

re-sorp'tion (L re = again; sorbeo = drink in): absorption or removal of previously formed gastropod shell by its animal

re-su'pi-nate (L resupinare = to bend back): having the appearance of being upside down, inverted, reversed; the aperture recurved toward the spire and not continuing in the direction of the volutions

re-tic'u-la-ted (L reticulatus = made like a net): cross-ridged, distinct lines crossing each other like a network; cancellated; sculpture not crossing at right angles

ret'i-form (L rete = net; forma = form): sculpture having the form of a net in texture, composed of crossing lines

re-tract' (L re = back; traho = draw): to draw back or backward, draw in as within a sheath, shrink away, recede; retractile: capable of being drawn in, having the tendency to retract; retractor muscle: that which draws the head-foot mass into the gastropod shell; there are two retractor muscles in the genus Haliotis attached to the interior of the shell

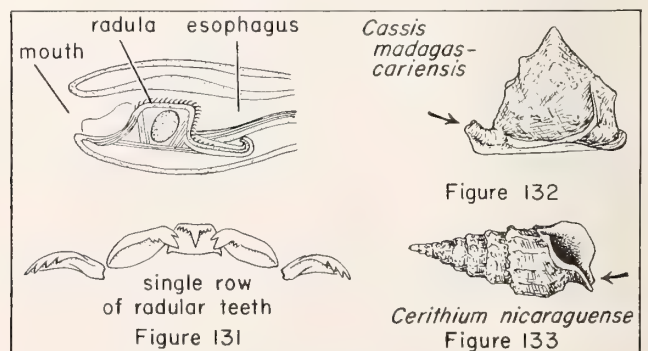
re-tro-flect'ed (L retro = backward; flectere = to bend, to turn): bending in different directions, bent or turned backward abruptly

re-torse' (L retro = back; versus = to turn): turned, bent, or directed backward, pointing backward

re-tuse' (L retusus = blunt): terminating in a round end or apex in which there is a slight depression

re-versed' (LL reversare = to turn about): when a spiral shell turns in the opposite direction; the aperture opening on the left side when the apex is upward; left-handed, sinistral; opposed to dextral (e.g., Peracle and some Busycon) (see Fig. 39)

re-volv'ing lines (L re = back; volvo = turn round): moving in a circular course; spiral lines on a shell which run parallel with the sutures; revolute: curled or rolled backward or downward





rhachidian: see rachidian

Rhachiglossa: see Rachiglossa

Rhip-i-do-glos'sa (Gr rhipis = fan; glossa = tongue): a suborder of Archaeogastropoda, except limpets, having a radula with each transverse row furnished with numerous long, narrow, hooked marginals arranged in a fan-like manner and usually five similar admedians on either side

rhomb-boi'dal (Gr rhombos = revolve; eidos = form): like a parallelogram of unequal sides and with no right angles, as the somewhat rhomboidal color spots on Conus ebraeus Linnaeus (Fig. 134)

rib (AS ribb = a rib): a long and narrow ridge, strip; a firm rib-like elevation; riblets: small or rudimentary ribs, as the longitudinal riblets on dentaliums

right valve: when the bivalve shell is held with the hinge up and the apex or umbo pointed away from and pallial sinus toward the observer, then the right valve is on the right

ri'mate (L rima = a cleft): provided with a very small hole or crack, a fissure, a chink (e.g., Rimula frenulata Dall or Puncturella) (Fig. 135)

rin'gent (L ringens = to gape): gaping, as the valves of certain bivalves (e.g., Mya, Ensis, Solen) (see Fig. 61)

ro-bust' (L robustus = hardy, robust): short, stocky, stout, thick, as a robust hinge

ro-sa'ceous (L rosa = rose): rose-colored, a deep intense pink

ros'trate (L rostrum = a beak): extremities produced, a beak-like process, beaked; usually used in describing the anterior end of bivalves; rostriform: having the form of a beak (e.g., Leda hamata Carpenter) (Fig. 136); rostrum: extremity of the last whorl but not the siphonal canal

ro'tate (L rotatus = turned): to turn, cause to

turn around its own center or axis, revolve  
ro-tel'li-form (LL rotella = a little wheel; forma = form): the form of the Umbonium shell (formerly known as the genus Rotella), with a low obtuse spire and nearly lenticular in shape

ro-tund'ate (L rotundus = round): rounded out, nearly circular; rounded at the angles, sides, or ends

ru-big'i-nose (LL rubiginosus = rusty): rusty or brownish red, rust-colored; rubiginous

ru-di-men'ta-ry (L rudimentum = a first attempt): being in an initial, early, or incomplete stage of development; undeveloped; embryonic

ru-dis'tids (L rudis = rough): an extinct division of inequivalve bivalves with a lower elongated conical valve composed of built-up, plate-like layers; the upper valve, a small lid, with long teeth projecting into the sockets of the lower valve

ru'fous (L rufus = red): dull red, yellowish or brownish red, tawny, rust colored, rufescent

ru'ga (L ruga = a wrinkle, a fold): a wrinkle, fold, or crease; rugose: rough, covered with or full of rugae or wrinkles, corrugate; rugosity: the quality of being rugose or corrugated

run'ci-nate (L runcina = to plane off): notched, saw-toothed, with incisions inclined backward

rus'ti-ca-ted (L rusticus) = country, rural): plain, old-looking, antiquated

## S

sag'it-tate (L sagitta = an arrow): shaped like an arrowhead, pointed at the apex and having the base prolonged backward into two acute lobes or ears; sagittal: resembling an arrow

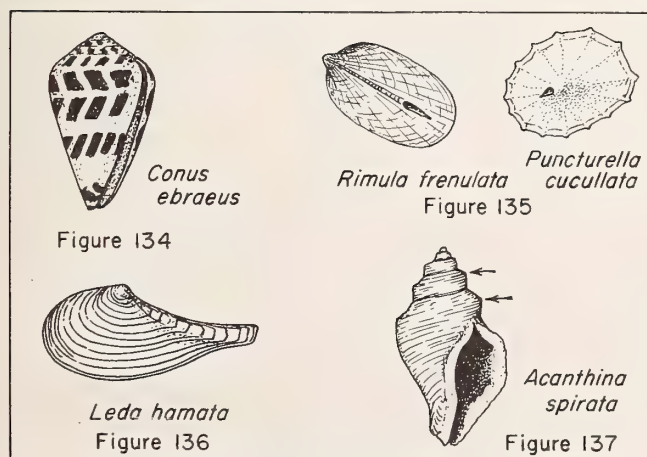
sa'li-ent (L saliens = to spring forth): standing out, conspicuous, projecting outward, prominent, as whorls with a salient angle on Acanthina spirata Blainville (Fig. 137)

sand dollar: a flat sea urchin, a cake urchin (not a mollusk)

san'guine (L sanguis = blood): having the color of blood, dull red verging on a dark brown

sat'u-rate (L saturatus = to fill full): very deep or intense, applied to colors; deeply or very darkly colored

sca'brous (L scabrosus = rough): rough, roughened with little rigid points or minute elevations or irregularities



sca-lar'i-form (L *scalaris* = a staircase, a ladder; *forma* = form): loosely spirally coiled like ladder shells; having transverse bars and spaces like a ladder (e.g., *Cerithidea scalariformis* Say); scalaroid: like a ladder

scales (AS *sceale* = scale): usually denotes the small overlapping or closely set calcareous bodies ornamenting the dorsal side of the girdle of many chitons

scal'lop (OFr *escalope* = a shellfish): a pecten, a semicircular bivalve shell with radiating ribs, the muscle used as food; a scallop-shell worn as a pilgrim's badge; scalloped: indented, cut at the edge or border into segments of circles

scalp: a bed of shellfish, especially of mussels or oysters

Sca-phop'o-da (Gr *scaphe* = boat; *podos* = foot): tusk or tooth shells, a tapering, curved, tubular shell open at both ends and elongated, foot adapted for burrowing, shell in one piece, lives exclusively in the sea (e.g., *Dentaliidae*); scaphoid: boat-shaped (Fig. 138)

scro'ti-form (L *scrotum* = pouch; *forma* = form): purse-shaped, pouch-shaped

sculp'ture (L *sculptura* = carve): the markings or pattern of markings upon the surface of a shell, the raised or depressed surface markings, incised lines, ornamentation

scu-tum (L *scutum* = shield): one of the two lower valves of a barnacle; scuta: paired plates of a barnacle; scutiform: shield-like, peltate; scutellum: a little shield (Fig. 139)

seam (AS *seam* = a seam, suture): a visible line of junction between parts, the suture

se'cund (L *secundus* = following): having the parts or organs arranged on one side only, pointed one way, unilateral

se-cu'ri-form (L *securis* = ax; *forma* = form): having the form of an ax or hatchet, hatchet-shaped

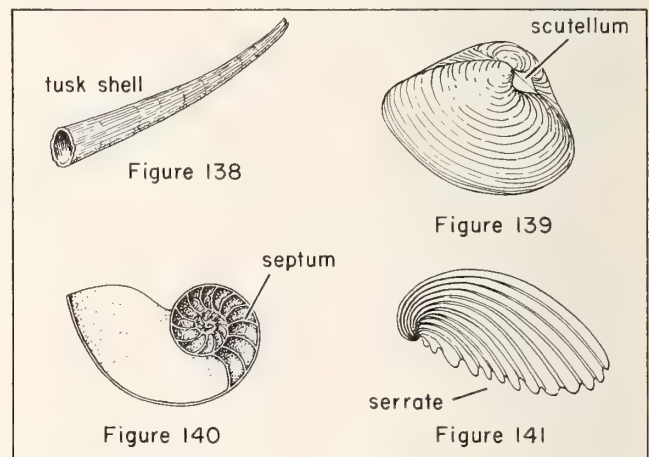
sel-en-i-zone (Gr *seline* = the moon; *zone* = girdle): a formation on the shell surface of a band of crescentic growth lines caused by the semicircular end of a notch or slit on the outer lip (e.g., in *Pleurotomariacea*)

semi- (L *semi* = half): a prefix indicating half, partly, half of, in part, imperfectly; semidentate: half toothed; semi-elliptical: half an ellipse; semi-globose: not quite globose; semilunar: crescent-shaped; semisagittate: half arrow-shaped; semitubular: nearly tube-shaped; semitransparent: imperfectly transparent, translucent

sep'tum (L *septum* = a partition): a calcareous plate or partition, one of the transverse partitions of a chambered shell, a dividing wall; septate: partitioned off into septa; septiform: having the form of an enclosure or septum (Fig. 140)

se-ri'ceous (L *sericus* = silken): having the surface shining by means of dense, minute, short, silky hairs; giving a silk-like luster

ser'rate (L *serratus* = to saw): toothed or with sharp notches along the edge like a saw; serriform: saw-toothed, in the form of a series of notches; serrulate: diminutively serrate, serrate with small fine teeth or minute notches (e.g., on the operculum of *Strombus* or the internal margin of *Cardiidae*) (Fig. 141)



ses'sile (L *sessilis* = to sit): immediately attached by the base, not supported by a stalk or stalk-like part; fixed, sedentary, settled in one place

se-ta'ceous (L *seta* = a bristle): a bristle or bristle-like part, a slender spine, attenuated to the tip, as the spines; setiferous: hairy; setose: bristly, set with bristles, covered with stiff hairs or setae

sha'greened (shagreen = a kind of untanned leather prepared in the East from skins of horses, camels, etc., and covered with small round granulations by pressing small seeds into the grain or hair side when moist and when dry scraping off the roughness, dyed chiefly green): covered with shagreen; having numerous tooth-like projections

shell (AS *scell* = shell): a hard, rigid, calcareous or chitinous structure encasing an animal or covering some part of it, as the univalve or bivalve shell of a mollusk or the internal shell of the cuttlefish



shipworm: a worm-like marine bivalve that bores into ship bottoms, wharf pilings, or other submerged timber (e.g., *Teredo*, *Bankia*)

shoul'dered (AS sculder = shoulder): ridged, as the whorls in some gastropods (see Fig. 137)

sig'moid (Gr sigma = the letter Σ; eidos = form): shaped like the letter S, sigmoidal

sil'i-qui-form (L siliqua = a pod; forma = form): having the form of a siliqua, long, tubular and narrow like a pod (e.g., *Siliqua*, *Tenagodus*) (Fig. 142)

Si-lu'ri-an Period (strata in region of Silures, western England and Wales): an earlier period of the Paleozoic Era, sometimes called Age of Invertebrates

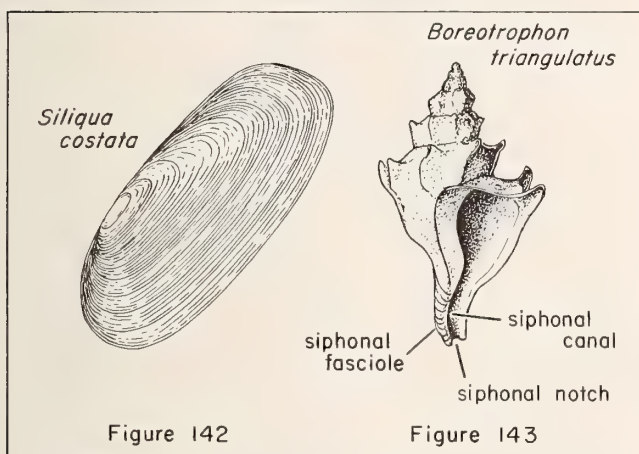


Figure 142

Figure 143

sim'ple (L simplex = simple): destitute of any remarkable process or appendage, without embellishment, plain

sin'is-tral (L sinister = left): having the whorls of a spiral shell turning toward the left, twisting to the left side or left hand when the apex is upward; counter-clockwise, reversed; opposed to dextral (e.g., *Peracle*, some *Busycon*, and some *Achatinella*); see also reversed

sin'u-ous (L sinus = bend): undulating, winding and turning in an irregular course; sinuated: curved in and out, as on a margin, wavy, tortuous; sinuosity: wavy line, series of regular bends

si-nu-pal'li-ate (L sinus = a curve; pallium = mantle): having a pallial sinus or recess in the posterior part of the pallial impression due to the retraction of the siphons in a bivalve

si'nus (L sinus = a curve): depression, bend, embayment; a recess or indentation, as in the pallial line of a bivalve (see Fig. 116)

si'phon (Gr siphon = siphon): a prolongation or fold of the mantle conveying water into the mantle cavity in most shells, an inhalant siphon; siphonal canal: a tubular extension of the aperture for the enclosure of the siphon; siphonal fasciole: curved growth lines marking the former position of the siphonal notch: a narrow sinus of the margin aperture near the base of the columella (Fig. 143)

si'pho-no-stom'a-tous (Gr siphon = siphon; stoma = mouth): having the shell aperture notched or formed with a spout or canal for the protrusion of the siphon

si'phun-cle (L siphunculus = a little tube): the little tube connecting the chambers in a nautiloid shell

si'tus (L situs = put): locality, site, situation, relative position

slit (AS slite = slit): a shallow or relatively long incision in the outer margin of the aperture of a gastropod; slit band: a band of crescentic growth lines, selenizone

slope: refers to a face of a bivalve shell (e.g., central, anterior, or posterior slope)

smar'agd-us (Gr smaragdos = emerald): of the color of the smaragd, emerald-colored, green

sock'et (L soccus = a shoe): a cavity in the hinge of a bivalve to receive the tooth of the opposite valve

so-len'i-form (Gr solen = a pipe; forma = form): an elongated shell shaped like a razor handle, razor clam shape (e.g., *Ensis*, *Solen*) (see Fig. 47)

so-lute (L solvo = apart): wholly separate, free; opposed to adnate

spa-tan'goid (Gr spatanges = a sea urchin): like the heart sea urchins, the Spatangoids

spat'u-late (Gr spathe = broadsword): oblong with an attenuated base, shaped like a spatula, a linear form enlarging suddenly into a rounded extremity; spathate

spe'ci-es (L specio = behold): a group of mollusks, subordinate to a genus, having members that differ among themselves only in minor details of proportion, structure, or color

spic'ule (L spiculum = a dart): a small, slender, hard body, sharp-pointed, often needle-like, as the spiculate fringe on the girdle of chitons

spin'dle (AS spindle = spin): fusiform, tapering from the middle toward each end, as *Fusinus* (Fig. 143)

- spines (L spina = spine): a pointed process or outgrowth, stiff, sharp-pointed; spiniform: resembling a spine in shape; spinulous: having small spines; spinose: armed with sharp spines (e.g., *Murex*, *Spondylus*)
- spi'ral (L spira = a coil): winding outward and constantly receding from the center, like a watch spring; spiral conic: an advancing spiral, winding around an axis and forming a cone shape (Fig. 144)
- spire (L spira = a coil): the whole series of whorls of a spiral shell except the last one; the body whorl or the preferred term, last whorl
- spur (AS spura = a spur): a spur-like projection, elongated shelly process, calcar
- squa'mous (L squamosus = covered with scales): consisting of scales, divided into upright pieces and not parallel with the plane, rough with projecting scale-like processes, squamose; squamiform: having the shape of scales, squamoid (e.g., *Tridacna squamosa* Lamarck) (see Fig. 76)
- sta'tion (L status = to stand): the particular circumstances surrounding the specimens collected, an area of a certain character as being inhabited by certain organisms, habitat
- stel'late (L stella = a star): star-shaped or star-like, radiating, resembling the rays of a star (e.g., *Astraea*) (Fig. 145)
- Sten-o-glos'sa (Gr stenosis = narrow; glossa = tongue): the suborders, Rachiglossa and Toxoglossa, have been combined under this name only because of their narrow radula, but they have little else in common; renamed Neogastropoda in 1938
- stenotopic (Gr steno = narrow, confined; topica = local): a group name for species in a community restricted in range to a narrow area, such as the limpet *Acmaea paleacea* (Gould, 1852) which occurs only on the narrow leafed eel grass *Phyllospadix torreyi*; see eurytopic
- stri'ae (L stria = a furrow, a groove): superficial furrows or very fine lines which cross the surface of the shell in different directions; striate: sculptured with microscopic lines, either longitudinal or revolving, marked with fine grooves or incised lines
- stri'ga (L striga = a furrow, groove, channel): a narrow transverse line or streak; strigate: marked with fine closely set grooves; strigose: rigid or pointed surface, like that of a file
- strom'boid notch (L strombus = a spiral snail): the wave, curve, or notch in the outer lip of a *Strombus* just above the anterior notch; strombiform: the general shape of a *Strombus* (Fig. 146)
- styl'oid (L stylus = a pointed instrument): long and slender; styliiform: a form with parallel sides and a pointed apex; stylet: a stiff, pointed process
- sub- (L sub = under, below): a prefix indicating somewhat, almost, not quite, nearly, less than normal, slightly, secondary, lower in grade
- sub'ge-nus (L sub = not quite; genus = tribe): a group of closely allied shells varying slightly from the larger group of the genus (e.g., genus *Cassis*, subgenus *Cypraecassis*)
- sub-spe'cies: a variety of the true species (e.g., *Siphonaria maura maura*, *S. maura palmata*, *S. maura pica*)
- su'bu-late (L subula = awl): shaped like an awl, linear, very narrow, very slowly tapering to a sharp point
- suc-cinct (L sub = under; cingere = to gird): short, contracted, reduced, compact
- suc-to'ri-al (L suctus = suck): having organs for sucking or adhesion, the power of clinging by suction

*Architectonica nobilis*

spiral

*Calliostoma heliarchus*

spiral conic

*Astraea longispina*

Figure 145

*Strombus pugilis*

Figure 146

Figure 144



suf-fused' (L suffusus = to pour beneath): over-spreading, to overspread as with color, to cover the surface

sul'cus (L sulcus = a furrow): a groove, longitudinal furrow; sulcate: grooved, scored by deep broad channels longitudinally, having sulci; sulcations: encircled by channels

sum'mit (L summum = the highest point): the apex, the top, the highest part of a bivalve shell in which the hinge is situated

su-per-posed' (L super = above; ponere = to place): placed directly over some other part, one layer upon another, superimposed

sutural laminae: also called apophysis plates which, when present, are anterior plate-like projections of the articulamentum extending from either side of the tail valve or an intermediate chiton valve

su'ture (L sutura = a seam): the line of junction or seam along which two hard structures join, a continuous spiral line marking the junction of whorls in a gastropod shell

sym-met'ric-al (Gr syn = with; metron = measure): equal-sided, well balanced, having similar parts arranged in regular reverse order on both sides

sympatric (L syn = together, with): co-existing, formation of two species in one place

sym'phy-note (Gr symphyes = growing together; noton = back): having the valves firmly fixed or soldered at the hinge, as in some river mussels

syn-op'tic (Gr syn = together; ophis = view): parts that, when compared, are virtually identical

syn'type (Gr syn = together; typos = strike): one of several specimens of equal rank upon which a species is based; syntypic: relating to the same type

## T

tab'u-la-ted (L tabula = table): the form of a broad, flat surface, form of laminae or plates

Tae-ni-o-glos'sa (Gr tainia = a ribbon; glossa = tongue): a suborder of gastropods with numerous transverse rows of lingual teeth, usually seven to a row; the median tooth frequently has cusps, with the largest in the middle, broad cuspidate admedians and narrow and hooklike marginals (e.g., Littorinidae)

tal'on (L talus = heel): shaped like a claw, unguiculate like the opercula in Strombus and Conus (Fig. 147)

tau-ton'y-my (Gr tauto = same; onyma = name): in the binomial system the use of the same name for the genus and species (e.g., Rapa rapa Linnaeus, Lima lima Linnaeus)

Tax-o-don'ta (Gr taxis = order, arrangement; dont = tooth): an order of bivalves having the hinge furnished with numerous, similar interlocking teeth, and usually with two muscle scars present (e.g., Arcidae)

tax-on'o-my (Gr taxis = order; nomos = a law): the laws or principles of the systematic classification of organisms or of the morphological facts; taxonomist: a classifier

teeth (AS toth = tooth): pointed protuberances at the hinge of bivalve shells which engage corresponding sockets in the opposite valves; the tooth-like structures in the aperture of some shells, as on the inner lip of Nerita or on the outer lip of Cassis

teg-men'tum (L tegere = to cover): a covering, to cover the upper exposed layer of the valves of chitons; tegument: any natural outer covering

teleo- (Gr teleos = complete): used as a formative in various scientific terms to signify perfect or whole; teleoconch: the entire gastropod shell except the protoconch

ten'e-brous (L tenebrae = darkness): dark, gloomy

ten'u-ous (L tenuis = thin): thin, slim, delicate, slight depth or thickness

ter-a-tol'o-gy (Gr teras = a wonder; ology = speak): biologically of abnormal or irregular growth, deviating from the normal type; teratological: pertaining to teratology

ter'e-brant (L terebrans = boring): that which bores, a bore, fitted for boring

te-re'do (Gr teredon = a borer): ship worm, a bivalve mollusk that bores holes in wooden ships, pilings, and other timber placed in sea water

te'res (L teres = rounded): nearly cylindrical

te-re'te' (L teres = round): cylindrical or slightly tapering, circular in cross-section

ter'ga (L tergum = back): referring to the paired posterior plates of the shell of a cirriped, barnacle

ter'mi-nal (L terminus = a boundary): forming the end of a series or part, at the extreme

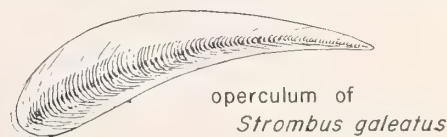
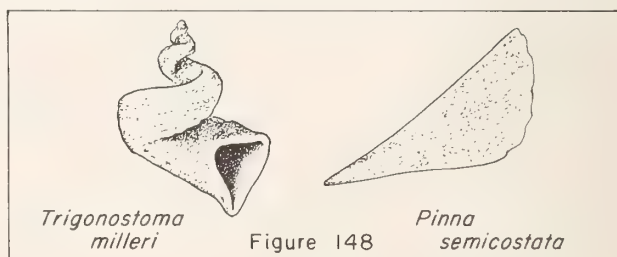


Figure 147

- end, especially with reference to an ovate or cylindrical shell
- ter-res'tri-al (L terra = the earth): living and existing on the earth, having its habitat on the ground, as land snails; opposed to aquatic and arboreal
- ter'ti-ar-y (L tertius = third): third in point of classification; third in degree of standing
- tes'sel-la-ted (L tessellatus = checkered): checkerboard pattern, color patterns on the shell arranged in checkered square or oblong patches (e.g., *Cypraea tessellata* Swainson)
- test (L testa = a shell): a rigid external covering or supporting structure of mollusca, the calcareous shell of a sea urchin or foraminiferon; testaceous: of the nature of shell, having a hard shell, as distinguished from crustaceous or soft-shelled; testaceology: conchology, the study of shells
- tet-rag'o-nal (Gr tetares = four; gonia = angles): four angles and four sides, quadrangular, a square, parallelogram, rhombus, oblong, trapezoid
- thal-as-soph'i-lous (Gr thalassa = the sea; philos = fond of): inhabiting or dwelling in the sea, pelagic, thalassic
- thread (AS thraed = twist): a slender linear surface elevation; the silky fibers of the byssus
- to-men'tose (L tomentum = down): covered with hairs so close together that individual hairs cannot be separated, downy
- top'o-type (Gr topos = place; typos = strike): a species collected at the same locality where the original type was obtained
- to'rous (L torus = a swelling): swelling into knobs, knobby, cylindrical and swollen at intervals, having protuberances; torose
- tor'pid (L torpidus = to be numb): dormant, inactive, dull, sluggish, like a snail in hibernation
- tor'sion (L torqueo = twist): a twisting around, twisted spirally, as a gastropod; tortuous: twisting, winding
- to'rus (L torus = a bulge, a knot): blunt, rounded ridge, round swelling or bulging place
- Tox-o-glos'sa (Gr toxikon = poison; glossa = tongue): a suborder of gastropods having a radula consisting only of long teeth or single paired lateral teeth (e.g., Conidae, Turridae, Cancellariidae); in Conidae a poison sac is associated with the large teeth or fangs
- trans-lu'cent (L trans = over; luceo = shine): allowing the passage of light yet so scattered that the objects from which the light comes are not visible; semi-transparent
- trans-par'ent (L trans = through; parens = to appear): admitting the passage of light without irregular diffusion so that distinct images may be seen through the medium; diaphanous, pellucid
- trans-verse' (L transversus = lying across): lying across, crosswise; bands or striae running across the shell at right angles to the axis
- trap-e-zoid'al (Gr trapeza = table; eidos = form): a four-sided plane figure, two sides of which are parallel and the other two are not (e.g., *Barbatia tenera* C. B. Adams and some *Arca*)
- trema (Gr trema = a pore, a hole): one or a series of openings occurring in the outer wall of some gastropods for excretory functions; tremata: plural tremata
- trench'ant (Fr trencher = cut): sharp-edged, as a thin outer lip
- Tri-as'sic Period (Gr tri = three): earliest period of Mesozoic Era; refers to three well marked subdivisions in Central Germany, but this strata is not generally characteristic
- tri-cos'tate (L tri = three; costa = rib): having three ribs or ridges
- tri-cus'pi-date (L tri = three; cuspis = a point): a shell armed with three short points; ending in three points
- tri'dent (L tri = three; dens = tooth): having three teeth; three-pronged
- tri'fid (L tri = three; findo = split): divided more or less completely into three parts or sections
- trig'o-nal (Gr tres = three; gonia = angle): pertaining to or in the form of a triangle, three-cornered (e.g., the aperture of *Trigonomostoma* or shape of *Pinna*) (Fig. 148)
- trip'ar-tite (L tri = three; partiri = to divide): divided into three parts or divisions or segments
- tris'tis (L tristis = sad): sad-colored, gloomy
- trit'u-rate (L tritura = to rub to pieces): to reduce to fine powder; masticate, pulverize





tro'chi-form (L trochus = a top): having the form of a top shell, conical, trochoid (e.g., Trochidae) (Fig. 149)

troch'le-ar (Gr trochilia = a pulley): short, circular, compressed and contracted in the middle of the circumference like a pulley block

trun'ca-ted (L truncus = maimed): cut off, terminating abruptly, appearing as if cut or broken squarely off, lopped off at the top (e.g., Truncatella or Leda hamata Carpenter)

tu'ber-cle (L tuber = a swelling, a hump): a little knob, nodule, pertaining to a rough elevation; tuberculated: having a number of small knobs, pimples, or small projections; tuberculose: characterized by tubercles, full of knobs

tu'bu-lar (L tubulus = a small tube): perforated all through and open at both ends (e.g., Dentalium); tubule: a minute tube

tu'mid (L tumidus = to swell): swollen, fat, enlarged, abnormally distended (e.g., Modiolus capax Conrad)

tu'ni-ca-ry (L tunica = a tunic): covered with a tunic, tunicated

tur'bi-nate (L turbo = a top): top-shaped, the coils piled one on another and tapering from a broad base to the apex, conical with a round base (e.g., Turbo) (Fig. 150)

tur'gid (L turgidus = swollen): bloated, swollen, inflated, distended

tur'ret-ed (L turris = a tower): tower-shaped, spire whorls regularly stepped in outline forming a long spire with somewhat shouldered whorls, screw shells; turriculated: having the form of a turret, a high conical spire; turri-form: tower-shaped (e.g., Turritella) (Fig. 151)

type (L typus = strike): a fundamental structure common to a number of individuals, having the essential characteristics of its group, a specimen or specimens upon which a description of a species is based; type locality: where the holotype specimen was found

type species: the species used by the author of a genus to characterize that particular genus

typh'lo-sole (Gr typhlos = blind; solen = a pipe): a longitudinal folding of the dorsal intestine wall into the intestinal lumen

Tyrian purple: a famous purple dye originally made at Tyre obtained from several species of Murex, Purpura, and Thais (e.g., Murex trunculus Linnaeus) and used in ancient times



Figure 149



Figure 150

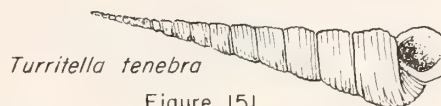
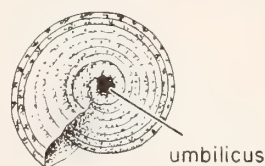
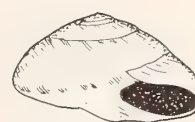


Figure 151



Architectonica nobilis

Figure 152



umboniform

Umbo-nium giganteum

Figure 153

## U

ul-tra-dex'tral (L ultra = beyond; dextral = to the right): a shell which appears to be sinistral but has a dextrally organized animal; hyperstrophic

ul-tra-sin'is-tral (L ultra = beyond; sinister = left): a shell which appears to be dextral but has a sinistrally organized animal; hyperstrophic

um-bi-li'cus (L umbilicus = the navel): an indentation or cavity or a circular depression at the axial base of a spiral shell; the hollow formed in spiral shells when the inner side of the volutions do not join, large and deep in Architectonica (Fig. 152)

um'bo (L umbo = a knob or boss): that point of a bivalve situated immediately above the hinge, the beak, the first formed part of a bivalve, umbones; umbonal: situated near or relating to an umbo, as the umbonal area; umboniform: with a low, blunt or rounded spire and nearly lenticular in shape (e.g., like the genus Umbo-nium) (Fig. 153)

un'ci-nate (L uncinatus = hook): hooked or barbed at the end, unciniform; uncini: small hook-like structures which are numerous on the radula of plant-eating gastropods

un'du-late (L undulatus = waved): having a wavy appearance, as on a margin; sinuous, marked with wavy lines or in a series of regular bends, as some surface sculpture

un-guic'u-la-ted (L unguis = the nail): claw-like, resembling a claw or talon, as the typical operculum of Conus; ungulate

uni- (L unus = one): a prefix denoting one, single, containing or having one; uniauriculate: a single ear-like process, as in some bivalves; unicameral: having one chamber; unicarinate: a single ridge or keel; unicolor: one color; unicostate: a single rib or costa; unilamellate: possessing one lamina; unilateral: one-sided; unimucronate: a single point, mucro; uniplicate: a single fold; uniserial: a single row; unispiral: a single spiral; unisulcate: one groove or furrow

u'ni-valve (L unus = one; valva = leaf of a door): a mollusk with a shell composed of one piece, as the spiral shell of a gastropod

ur'ce-o-late (L urceus = a pitcher): pitcher-shaped, swelling or hollow at the base and contracted at the orifice

us'tu-late (L ustulatus = scorch or burn): so marked with brown as to appear scorched; discolored as if burned

## V

valve (L valva = a leaf of a door): one of the separable portions of a shell of a mollusk, brachiopod, or cirriped; univalve: when the shell is a single piece; bivalve: shell in two sections; multivalve: more than two sections, as in chitons

var'i-ces (L varix = bent): plural of varix; longitudinal thickened elevations which occur at intervals on the outer surface across the whorls of some univalves, indicates a periodic resting stage or a former position of the outer lip of the aperture; varicose: as Tritons; varicellate: marked with small varices, having small or indistinct varices

va'ri-e-ga-ted (L varius = various; ago = make): marked by different shades of colors, having marks or patches of different colors

va-ri'et-y (L varius = various): having minor differences, a subdivision of a species, a subspecies (e.g., Melongena corona perispinosa Pilsbry & Vanatta)

vel'i-ger (LL veliger = sail bearing): a larval mollusk in the stage where it has a ciliated swimming membrane or membranes; the bearer of a velum; free-swimming young (e.g., Littorina littorea Linnaeus)

vel'lum (L velum = a veil): a thin membranous covering; velated: having a velum

ve-lu'ti-nous (LL vellutum = velvet): velvet-like, covered with very thickset upright short hairs

ve'nose (L vena = a vein): having lines which branch like veins

ve'nous (L venosus = full of veins): having numerous veins; carried in a vein or veins

ven'tral (L venter = the belly): the edge remote from the hinge in a bivalve; the ventral margin is opposite the umbones; opposed to dorsal

ven'tri-cose (L venter = belly): shells swollen or inflated in the middle or on one side, the whorls or valves swollen or strongly convex, rounded out, distended, as the body whorl of Harpa

ver'di-gris green (OFr verd de gris = verd-green): a bluish shade of green resembling verdigris, a green product of corrosion on copper

ver-mic'u-late (L vermis = a worm): tracery simulating the tracks of worms, worm-like markings; vermicular: worm-shaped; vermiform: formed like a worm (e.g., Vermicularia, a worm shell); vermiculations: sculpture of irregular wavy lines, grooves, or channels

ver'ni-cose (NL vernix = varnish): shells appearing as though varnished or brilliantly polished; covered with a very thin, pale green periostracum

ver'ru-cose (L verruca = wart): having small knobs or lumps on the surface, covered with wart-like or verruciform elevations, warty

ver'tex (L vertex = the top): the top, apex, summit, highest or principal point

ves-tig'i-al (L vestigium = a footprint): small, atrophied, or degenerated from ancestral development; structures once more complete in functional activity

vil'li (L villus = shaggy hair): soft hairs like a pile of velvet; plural of villus

vi-na'ceous (L vinum = wine): wine-colored, reddish

vi-o-la'ceous (L violaceus = violet-colored): having a violet hue, tinged with violet or purple

vir'i-dis (L viridis = green): green, greenish or becoming slightly green, viridescent

vis'cid (L viscidus = sticky): having a thick or sticky consistency, sticky or adhesive

vit're-ous (L vitreus = glassy): glassy, transparent, thin (e.g., Vitrinidae, glass-snails, a group of small land snails)

vit'ta (L vitta = a ribbon, fillet): a colored, longitudinal, broad stripe or band; fascia



vi-vip'a-rous (L vivus = alive; parere = to produce): producing live young, as Vivipariidae, a freshwater gastropod born with a spiral shell; many freshwater bivalves are viviparous

vo-lute' (L voluto = to roll, turn, twist): a whorl or turn of a spiral shell; volution: a single turn of a coiled shell; Volutidae: a volutoid gastropod found mostly in tropical and subtropical waters

## W

wam'pum (Am. Ind. wompam = white): small beads formed from the interior parts of clam or oyster shells, used by the North American Indians as currency or worn as bracelets, necklaces, and belts; the beads were black, dark purple, or white, the white ones being the wampum proper; the Northwest Indians used tusk shells for wampum

wen'tle-trap (G Wendeltreppe = winding staircase): spiral, staircase shells (i.e., Epitoniidae)

whelk (AS wealcan = to roll): the family Buccinidae, edible and used for fish bait; preys on clams

whorl (AS hweorfa = the whorl of a spindle): a volution or turn of the spire of a univalve shell; one complete spiral turn; the largest whorl is the body whorl or the last whorl

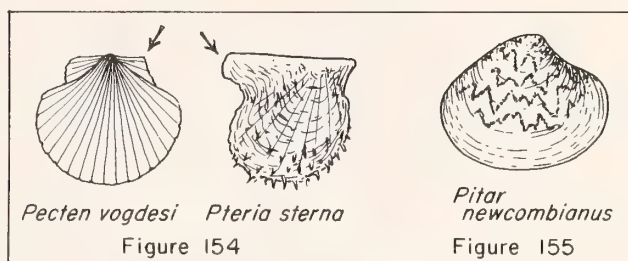
width (AS wid = wide): the maximum dimension measured at right angles to the length or height of the shell

windowpane shell: a bivalve shell with rather large, flat, circular, translucent valves;

the laminated structure is separated into thin sheets like mica and used as window pane glass in the Philippines, East Indies, and China (e.g., Placuna placenta Linnaeus)

wing (Dan. vinge = wing): a projection, expansion, or ear-like extension on a pelecypod in the hinge line (e.g., Pectens, Pteria) (Fig. 154)

wrin'kled (ME wrinkel = wrinkle): to contract into furrows or prominences, ridged on the surface, corrugated



## Z

zig'zag (G zickzack = sharp point): a series of short sharp turns or angles, as the color markings on Transennella puella Carpenter or Pitar newcombianus Gabb (Fig. 155)

zon'ate (L zona = a belt, a girdle): marked with zones or concentric bands of color, ringed, belted

zo'oid (Gr zoon = animal; eidos = form): an individual animal of a colonial (e.g., certain corals) or compound (e.g., certain tunicates) organism produced by asexual means (as by fission, gemmation, etc.)

## APPENDIX

## MAIN DIVISIONS OF GEOLOGIC TIME

PHANEROZOIC EON	present to 520 million years ago
CENOZOIC ERA	present to 60 million years ago
Neogene Period	28 million years duration
Pleistocene Epoch	
Pliocene Epoch	
Miocene Epoch	
Paleogene Period	32 million years duration
Oligocene Epoch	
Eocene Epoch	
Paleocene Epoch	
MESOZOIC ERA	60 to 185 million years ago
Cretaceous Period	70 million years duration
Jurassic Period	25 million years duration
Triassic Period	30 million years duration
PALEOZOIC ERA	185 to 520 million years ago
Permian Period	25 million years duration
Pennsylvanian Period *	25 million years duration
Mississippian Period *	30 million years duration
Devonian Period	55 million years duration
Silurian Period	40 million years duration
Ordovician Period	80 million years duration
Cambrian Period	80 million years duration
CRYPTOZOIC EON (Precambrian)	520 to 3,500 million years ago

\* Equivalent to Carboniferous Period (European)

## FOSSIL SHELLS

- Amphineura: In various Paleozoic strata as far back as Ordovician; Mesozoic and Cenozoic types resemble modern species
- Scaphopoda: Well represented since Devonian time; modern forms appear in early Cretaceous; common in Cenozoic
- Gastropoda: From earliest Paleozoic time; gradually increasing and developing to the present time
- Pelecypoda: Occur in Middle Ordovician beds; more numerous in Silurian; abundant in shales and sandstone of later Paleozoic formations; becoming more prominent in Mesozoic; reaching highest development in Cenozoic
- Ammonoidea: Appearing in Devonian; rapidly advancing to Permian; then becoming extinct in late Mesozoic Era
- Nautiloidea: Straight, coiled, or curved; numerous in some formations in Ordovician Period; abundant and varied in later Paleozoic and Mesozoic Seas; declining and less important in Cenozoic Era
- Brachiopoda: Varied and abundant in Paleozoic rocks; declining to fewer simple types in Mesozoic and Cenozoic time



















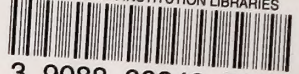








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